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QUARANTINE CHART
OF
NEW YORK HARBOR

ACCOMPANYING ANNUAL REPORT
OF
DR VANDERPOEL, HEALTH OFFICER.

1874.

Soundings in feet at mean low water. Depths 18 feet and over are marked except in channels.

FERD MAYER, GEN'L LITHS 96 & 98 FULTON ST.

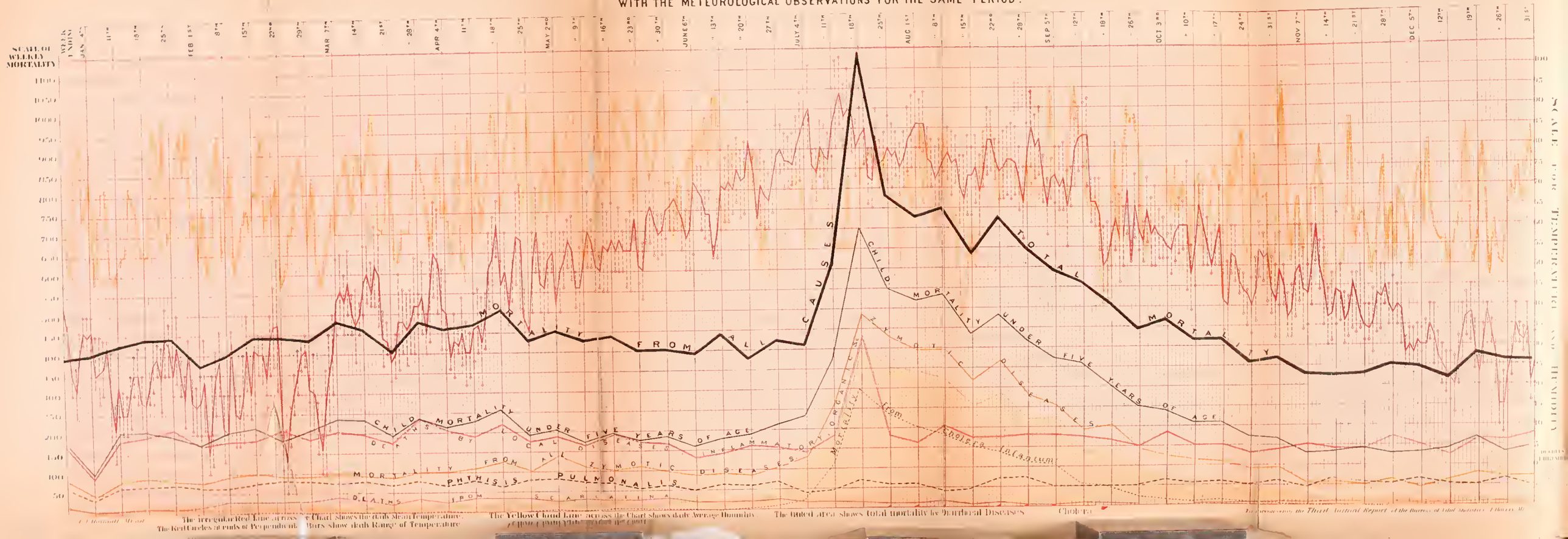
Scale of Miles
Statute Miles
Scale of Yards
Nautical Miles

VARIATIONS 7° 14'

HUDSON COUNTY
BERGEN COUNTY
WESTCHESTER CO.
QUEENS COUNTY
RICHMOND COUNTY
KINGS COUNTY
MONMOUTH COUNTY
NEW YORK BAY
UPPER BAY
LOWER BAY
NEWARK BAY
ATLANTIC OCEAN
HUDSON RIVER
EAST RIVER
NEWARK
JERSEY CITY
HOBOKEN
WEST HOBOKEN
WEEHAWKEN
WEST NEW YORK
FORT LEE
GUTTENBERG
NORTH BERGEN
HARRISON
KEARNY
WEST HARRISON
NEW DURHAM
HARLEM
MORRISANIA
WEST FARMS
WESTCHESTER
PELHAM
PORT MORRIS
HUNTS POINT
STRATTONS POINT
THROGS NECK
PELHAM HEIGHTS
PELHAM BAY
LONG ISLAND CITY
BLACKWELLS ISLAND
ASTORIA
NEWTOWN
FLUSHING
COLLEGE POINT
WHITESTONE
BAYSIDE
JAMAICA
FLUSHING BAY
FLUSHING CREEK
NORTH CREEK
BOWERY BAY
WILLIAMSBURGH
EAST NEW YORK
FLATBUSH
CANARSIE
FLATLANDS
NEW UTRECHT
GRAVESEND
GRAVESEND BAY
CONEY ISLAND
BARREN ISLAND
HAMILTON
STATEN ISLAND
ELIZABETHPORT
ELLIZABETH
ELIZABETH RIVER
ARTHUR KILL
STAPLETON
TOMPKINSVILLE
CLIFTON
RICHMOND
GREEN KILL
PRINCES BAY
SOUTH AMBOY
PERTH AMBOY
SANDY HOOK
FORT HANCOCK
SHREWSBURY
NAVESINK
HIGHLANDS OF NAVESINK
SHREWSBURY RIVER
SHIP BOTTOM
SHOAL
SOUTH CHANNEL
EAST BANK
FOURTEEN FEET BANK

THE COURSE OF THE TOTAL MORTALITY AND THE CHIEF FATAL DISEASES IN NEW YORK IN THE 12 MONTHS ENDING DECEMBER 31ST 1868.

WITH THE METEOROLOGICAL OBSERVATIONS FOR THE SAME PERIOD.



The Irregular Red Line across the Chart shows the daily Mean Temperature.
The Red Circles at ends of Perpendicular Bars show daily Range of Temperature

The Yellow Broad Line across the Chart shows daily Average Humidity

The Dotted Area shows Total mortality by Diarrhœal Diseases

To accompany the Third Sectional Report of the Bureau of Vital Statistics Elbridge T. Gerry

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1876

REPORT

OF THE

BOARD OF HEALTH.

[May 8, 1873, to January 1, 1875.]

To the Honorable,

The Common Council of the City of Brooklyn:

The Sanitary Committee, to whom, at a meeting of the Board of Health held November 18th, 1874, was assigned the duty of making a report of the operations of the Board during the period of time beginning May 8, 1873, and ending January 1, 1875, beg leave to submit the accompanying report.

The Department of Health.—This department was called into existence by virtue of an act entitled "An Act to establish a Board of Health in and for the City of Brooklyn," passed March 20, 1873, under Chapter 863 of the Session Laws of the State of New York, which act was incorporated, under Title 12, with the amended Charter of this city, passed June 28, 1873. An act, passed June 1, 1874, amending the charter, affects this department in respect of the constitution and powers of the Board.

The sanitary control of this city under the legislation which established a Metropolitan District continued four years, from 1866 to 1870. In the latter year, this control was vested by legislation in a committee of the Common Council, as a Board of Health, with a physician as Health Officer. This plan of organization continued three years, from 1870 to 1873, when it was succeeded by the present department.

The intent of the act of 1873, above mentioned, was to restore to this city a sanitary administration, by a sanitary commission, on the plan of the Metropolitan Board, so far as applicable to a limited district. This experiment was allowed to continue about one year, when by the act of 1874, the majority in the Commission became non-medical. Its plan of operations, however, has not essentially changed in consequence of this change in its constitution; but during the period covered by this report (about twenty months) its action has, in the main, been shaped to meet the sanitary rather than the political demand of the situation: and it need scarcely be said that it has been most successful whenever it has most

completely broken away from polities. In view of what has taken plaee in all parts of our eountry, it amounts almost to a trnism to declare that a Board of Health does its work well in proportion as it becomes non-partisan; for our experience shows that responsibility diminishes with the increase of political pressure; that the ery of "the good of the party"—it matters not whieh—makes itself heard above the voice of sanitary reform, exeept perhaps in times of general peril and alarm. Indeed a pestilenee, present or impending, sometimes beeomes a blessing in disguise by arousing public opinion, and compelling the State to listen to the claims of the publie health. Permanence is wanting, also, in most political health-boards; their measures therefore become expedient, or evasions and the serviees of their subordinates are apt to be half hearted and without system: a certain stability of tenure appears imperiously necessary to make radical health-work possible, to merit and win the confidence and respect of the citizen.

Organization of the Board.—Under the aet above mentioned the Board of Health was organized at a meeting held May 8, 1873, at which were present the three Commissioners constitnting the Board, namely, James Jourdan, member of the Board by virtue of his offiee as president of the Board of Police, and John T. Conkling, M. D., and Joseph C. Hutchison, M. D., appointed "sanitary" members, as the aet terms them. The Board began its organization by the election of James Jourdan as temporary President, and the appointment of Henry M. Connolly as Secretary. This organization eontinued until November 24, 1873, when Commissioner Conkling was chosen President, in place of Commissioner Jourdan, resigned. On December 15, 1873, E. L. Langford was appointed Secretary in place of H. M. Connolly, resigned.

Changes in the Board.—On June 1st, 1874, an aet amending the Charter was passed, adding two *ex-officio* members to the Board; "the President of the Board of Aldermen, and the President of Board of City Works of said eity, shall be members of said Board, with equal power and authority in the management and government thereof." In pursuanee of this legislation, Jacob I. Bergen, of the Board of Aldermen, and Lorin Palmer, of the Board of City Works, took their seats as *ex-officio* members of the Board, in addition to the three Commissioners above named. The Board reorganized June 26th, 1874, by the eleetion of Commissioner Conkling as President.

Sanitary Code.—At a regular meeting of the Board, held July 15th, 1873, was enaeted a code of health ordinanees, of 176 sections, entitled the "Sanitary Code," whieh was duly authentieated and advertised in the daily newspapers of this city as required by the Health Laws of 1866. In framing this Code the Board adopted as a model the Code of the Metropolitan Board of Health, introducing such modifieations as were suggested by the health ordinanee of this city published in 1870. Subsequently a few changes were made in the Code, as follows:

Section 50 was amended April 6, 1874. "That no person shall allow any pig, swine or goat to run at large in said eity; and no person shall within the limits of said eity keep, or permit to be kept, any pig, swine or goat without a permit to do so from this Board." Additional sections were adopted April 6, 1874.

Section 177. "That all privy-vaults or sinks hereafter made or rebuilt in the City of Brooklyn, shall be water-tight, and when on lots adjacent to sewers, shall be con-

nected with the same, in accordance with the regulations of the Board, and of the department in charge of Sewers." Also

Section 178. "That no cattle, swine, pigs, calves or sheep, shall be driven through the streets or avenues of the City of Brooklyn, or any of them, except between the hours of eight in the evening and two hours after sunrise the next morning, and then only through such street or streets as may be designated in a permit for that purpose, first had and obtained from this department." An additional section was adopted December 10, 1874.

Section 179. "That on and after the first day of January, 1876, the business of slaughtering animals shall not be conducted in the City of Brooklyn, unless the same shall be done in buildings located directly on the water-front, and so constituted as to receive all stock deliverable thereat directly from cars or transports, and to discharge therefrom all liquid refuse below low water mark, and to secure the proper care and disposition of all parts of the slaughtered animals upon the premises, or the immediate removal thereof; nor shall any cattle, sheep, hogs or calves be driven in the streets of such city; nor shall any offensive business growing out of that of slaughtering, such as fat-melting, hide-curing, gut-cleaning, bone-boiling, and glue-making be conducted in the City of Brooklyn, except on premises constructed upon the water-front; nor shall any fat, hides, hoofs, or entrails, or any refuse parts of slaughtered animals, (except fat or tallow attached to meat exposed for sale or collected by licensed dealers), be transported in said streets; nor shall any building be erected or converted into, or used as a slaughter house, or for any offensive trades connected with the business of slaughtering in said city, until the plans thereof have been duly submitted to the Board of Health and approved in writing by the said Board."

Records of Vital and Mortal Statistics—The Board directed the formation of an office of Vital Statistics, under a chief officer to be called the Register of Records. He has charge of the records and papers relating to the registration of births, deaths and marriages, and to the granting of all permits for the burial and transit of dead bodies. From his office is issued a weekly report of mortality, giving the causes of death, the ages, nativity race and location by wards. Under a regulation of the Code, a registry of physicians and midwives is kept for the protection of the department and the public from the fraudulent certification of deaths, and for other causes. By a resolution of the Board a new book for the registration of practitioners has recently been opened, in conformity with the terms employed in an "Act to regulate the practice of medicine and surgery in the State of New York," passed May 11th, 1874. Any person now claiming the privilege of registration is required to give, in addition to his or her name and residence, the source and date of his or her diploma, license or certificate, which the law now makes a prerequisite to the legal practice of medicine and surgery. During 1874, the total number of births reported was 7,668 or over 2,000 more than during any previous year; the total marriages, 2,675, the largest number yet recorded; both of these reported numbers are far below the actual figures. The condensed mortality statistics and their review are to be found in the reports of the Register; the tables accompanying those reports embrace the "consolidated abstracts" for the years 1873 and 1874 (see Tables I to VII). The abstract of 1872 follows (table VIII); this was made up by order of this Board and has never before been published. The recapitulation by weeks in 1872, (table IX), was made up under the predecessors of this Board, but has not yet been published. These last tables were compiled independently of each other and by different hands,—a fact which will explain a few discrepancies which exist in regard to the classification of diseases. These statistical contributions for three years which will now, but especially in the future, be esteemed by sanitarians and students the most valuable portion of this report, are presented herewith in the desire to complete so far as is in our power the mortality records, the regular publication of which has been

interfered with by frequent changes in the health administration of the city.*

Sanitary Permits.—Those kinds of business pursuits which, when improperly or negligently managed, become a source of offense and detriment to the neighborhood or the public, are by the Code made subject to sanitary control. To persons engaged in such pursuits permits are granted upon application, when the sanitary report is favorable; this permit having force only during the pleasure of the Board. All vessels that pass quarantine must apply for permits to discharge their cargoes in this city. The permits to scavengers are granted subject to the following rules:

"No scavenger shall empty or remove the contents of any sink, vault, privy or cesspool, before the contents thereof have been thoroughly disinfected in the manner directed by the Board of Health.

"No Scavenger shall remove part of the contents of a sink or privy, but shall in all cases empty the same to the bottom.

"Each Scavenger shall report at the office of the Health Department before one o'clock in the day, the number and street where his carts were at work the night previous, and the dock at which the carts dumped, and the number of loads, and whether the sink has or has not been emptied to the bottom."

Two officers of the sanitary police force were and have been until recently detailed as a patrol of the water front, to prevent the discharge of cargoes without written permit. Two other officers were and are assigned to the offal dock and take an account of the business done nightly by the scavengers.

The Health of the City.—The mortality of the city in 1873, was 10,968, or 25.2 per 1,000 in an estimated population of 435,000; in 1874 the mortality was 11,011, or 24.4 per 1,000, the population being estimated at 450,000 in that year. (The population is estimated to increase between three and four per centum annually; this rate of growth is adopted for the reason that, during the decade from 1860 to 1870, the population increased fully four per centum annually, but inasmuch as it is believed that the increase is not so large during the present decade that rate is placed a little above three per centum for the years since the last census.) These two years—1873 and 1874—compared with 1871 and 1872, when the mortality was 10,259 and 12,648 for those years respectively, and the death-rate was 24.9 and 29.5, show a diminished mortality, and indicate that there has been no marked declension in the public health from year to year, but rather that there has been an advance in the right direction. And this improvement, be it remembered, has taken place, so far as concerns the year 1874, in the face of an exceptionally strong epidemic influence, causing from diphtheria and scarlatina alone a mortality exceeding that of the previous year by 493 deaths. How far this improvement must continue before our city—salubrious and beautiful for situation—can be ranked among cities that are eminently healthful, must be judged by a comparison with certain others, which are older, and have for a longer time been the subjects of sanitary surveillance, and have reaped the benefits of sanitary works. Thus in the year 1872, there died in London 21.4 in each thousand inhabitants; in Paris and Frankfort about the same proportion; in Geneva 19.4 per 1,000; in Bristol 22.0; in Brussels 22.6; in Portsmouth 22.9; in Birmingham 23.0. It is estimated that in an ideal city, wherein no deaths occur from prevent-

*The mortuary tables for the last eight months in 1870 and the whole of 1871 have already appeared in the annual reports of the late George Cochran, M. D., the health officer during those years. The Metropolitan Health Board Reports from 1866 to 1869 contain similar abstracts of the mortality of this city for those years.

able causes, the annual mortality will not exceed 17 in each thousand of the population; assuming this as correct for our latitude and climate, it will be appreciated that there must be at work agencies inimical to the public health, so long as the present death-rate persists,—agencies which in a well-governed community are controlled, and which every earnest health administration will attack with persistent energy and intelligent thought. The reduction of the difference between the present excessive rate and the least preventable mortality will, after a term of years, be the measure of success of any sanitary orginization. Brooklyn has certainly advantages over many cities, it is comparatively young and free from evils which have entrenched themselves by long continuance; her population, industrious and intelligent, not burdened by pauperism and illiteracy; the location, in the main, salubrious, the air pure; the water eminently pure; an extensive sewerage system that is in general use; the dwellings not overcrowded, and those newly constructed take advantage of the modern improvements in building. To these natural and acquired advantages, add a competent and resolute sanitary organization with large powers, and there is no reason apparent why this city may not rank among the most healthful of large communities on the face of the globe.

Epidemic Disease.—The city has been exempt from pestilential disease of the imported description. Occasionally cases of yellow fever, and cholera have been reported by physicians, but they have not been verified by official inspection. The advent of cholera was apprehended in 1873 and 1874, and to a fatal extent prevailed in other sections of the country, but our own vicinity was almost wholly exempt from it.

In this connection, it is proper to congratulate the quarantine establishment of the port of New York upon the success and efficiency which has marked its recent management. The shore-line of this city and of King's County has at times past been seriously imperilled by a less effectual protection.

Epidemic diseases, not imported, find mention under the head of contagious diseases.

REVIEW OF THE PROCEEDINGS OF THE BOARD.

General Policy of the Board—Citizens' Complaints—At an early meeting the aims of the Board, and its attitude to the public found expression in a resolution from which the following is a quotation: "The organization of this Board under the law is a direct proclamation to the public that to the fullest extent its provisions will be used to secure immunity against the sources of disease. The first duty evidently is to arouse the public mind as to the necessity of sanitary regulations, to demonstrate the general well-being of all, that health and life itself, depend upon preventive measures." As against nuisances, as so many foci of disease to be greatly modified or entirely removed, the Board declared its policy agressive, and citizens were invited to coöperate by entering complaints at the office, the Board engaging to take cognizance of them; and for a time five inspectors were occupied in investigating and suggesting the proper remedy for them. During the period covered by this report 3527 citizens' complaints communicated verbally and in writing have been received and acted upon.

Orders and Notices of the Department.—The orders of the Board for the abatement of nuisances are founded upon the written reports of its sanitary inspectors, and of the members of the sanitary company of the

department of police and excise. These reports are sworn to before a notary public or an officer of the Board authorized by law to administer oaths. These sworn reports are examined in the office of the Sanitary Superintendent, and all of them that require to be acted upon by the Board are forwarded to the attorney for an endorsement of the proper order in legal form. The complaint and proof in each case having been presented to the Board, the orders and notices, are entered usually in the form recommended by the attorney and copies signed by the secretary are forwarded to the sergeant of the Sanitary company for service upon the owners, occupants, tenants, lessees or agents of the premises upon which the nuisance exists. During the period covered by this report (about twenty months) the number of orders and notices issued by the Health Department was thirteen thousand five hundred and one, of these one hundred and fifty-two were orders under the first subdivision of section 14 of chapter 74 of the Session Laws of 1866, by the terms of which the party served is allowed three days in which to demand a "hearing" by the Board of the testimony which may be presented to show that the order should be revoked. In cases where no hearing has been demanded, and the order has not been complied with, final orders to the number of four have been issued.

Other orders, in number seven thousand seven hundred and fifty-five, were issued under the second subdivision of the section above mentioned; these are peremptory in character, and require that the nuisance be abated within five days from the date of service. Orders for the vacation of premises, fourteen in number, were issued under section 11, of chapter 908 of Session Laws of 1867, upon the certificate of the Sanitary Superintendent that the buildings were unfit for human habitation, by reason of its want of repair and danger to life. Immediately upon the organization of the Board, the Sanitary Superintendent was authorized and directed to write and serve notices of violations of the Sanitary Code and Health Laws upon persons complained of by the Sanitary Inspectors and the Police; this method continued in use until July 22, 1873, at which date the Board began to issue the orders above described, and occasionally after that date, in cases where a prompt abatement of nuisances was required, notices were issued under said authority and direction. Under this method two thousand and seventy-nine notices have been written and issued by the office of the Sanitary Superintendent. The Board of Health, by virtue of and in pursuance of the power and authority conferred by law, at a meeting held July 15, 1873, ordained and enacted a Sanitary Code. Of the complaints made by the Sanitary Inspectors and the Sanitary Police of premises, matters and things in a condition dangerous to life and detrimental to health, a considerable number do not require the special action of the Board to make an appropriate order in each case, because the general provisions of the Sanitary Code are adequate. Some one or more of the sections are strictly applicable and define the very offence or neglect in question. The Board have therefore authorized and instructed its Secretary to refer all complaints immediately to the counsel of the Board, and in all cases where the counsel finds a complaint to constitute a violation of the Sanitary Code to notify the owners, lessees, agents, etc., of the fact and of the section of the code violated. The parties are served a written notice by the Sanitary Police requiring them to comply with the code within five days; non-compliance is followed by prosecution in the Police Courts for violation of the Sanitary Code. The advantages of this method are that the attention of the parties served is called to an unsanitary condition (very often an urgent matter, as leaking pipes, obstructed drains, etc.), without the delay incident to an order of the Board, which must wait a regular meeting of the Board; and that citizens are held amenable to a general law, instead of a

special order. Since May 7, 1874, three thousand five hundred and six notices have been written and issued under this method.

RECAPITULATION OF ORDERS AND NOTICES.

	May 1, 1873, to May 1, 1874.	May 1, 1874, to Jan. 1, 1875.	During twenty months.
Total number of Orders of the Board, Section 14, subdivision 1,	86	66	152
" " of Orders of the Board, section 14, subdivision 1, (Fiual)	2	2	4
" " of Orders of the Board, section 14 subdivison 2,	6640	1115	7755
" " of Orders of the Board, section 11, (vacation orders),	2	12	14
" " Notices of violation of Sanitary Code issued by the Board.		3506	3506
" " Notices of violatiou of Sanitary Code issued by Sanitary Sup't,	1973	106	2079
	8703	4807	13510

The following is a statement of the subject of the orders and notices above enumerated :

Alleys cleaned and disinfected..... 35
" repaired and repaved..... 21
Animals removed..... 12
" dead, removed..... 21
" glandered, destroyed..... 1
Areas cleaned and disinfected..... 78
" constructed..... 4
" covered and protected..... 13
" flagged and repaired..... 6
Ashes, garbage and offal removed....756
Boiling of bones, offal and tripe discontinued..... 12
Bridges repaired..... 3
Bristles, filthy, cleaned and disinfected 1
Burial ground discontinued and enclosed..... 2
Carts, garbage, cleaned and repaired. 5
" " use of, discontinued... 1
" offal " " " ... 4
" " repaired..... 2
" sewerage, cleaned and housed.. 3
Ceilings cleaned and whitewashed....159
" repaired..... 10
Cellars cemented and paved..... 12
" cleaned and disinfected 668
" drained..... 2
" steps repaired..... 20
" water in, removed..... 82
" (basements) vacated..... 86
Cesspools cleaned and disinfected.....292
" constructed.....136
" covered..... 2
" filled 132
" repaired..... 13
Chimneys and smoke pipes extended and repaired..... 32
Cisterns cleaned and disinfected..... 68
" covered..... 4
" filled..... 34
Coops for fowls cleaned..... 7
Coops for fowls removed..... 17
Corridors repaired..... 5
Cows removed, (number of orders)...221
" improper food of, discontinued. 4
Cow Stables cleaned and disinfected..214
" " connected with sewer... 28
" " drained to cesspool..... 34
" " removed..... 6
" " repaired and ventilated..140
Culverts constructed and repaired.... 2
Dangerous trees, signs, &c. removed.. 14
Docks and slips dredged, (number of orders,)..... 2
Doors ventilating to roof, constructed, 3
" repaired..... 12
Drains constructed..... 99
" obstruction in, removed..... 37
" removed or closed..... 62
" repaired 21
" valley, in sidewalk, constructed 31
Dwellings, dilapidated, repaired throughout..... 10
Dwellings, unfinished, cleaned and enclosed..... 2
Excavations cleaned and disinfected.. 8
" dangerous, covered and enclosed 28
Excavations, dangerous filled..... 26
Fences made and repaired..... 88
Ferry house cleaned and ventilated... 1
Fire escapes constructed..... 38
Flagging regraded and relaid..... 22
Flooring cleaned and disinfected..... 22
" repaired..... 12
Garbage receptacles cleaned..... 10
" " " and removed.....152
Garbage receptacles provided.....298
Gas Works, process at, modified..... 1
" refuse of, removed..... 2

Goats removed..... 27
Gratings repaired..... 11
Gutters (house) constructed..... 51
" " extended and repaired 59
" (street) cleaned..... 19
" " obstruction in, removed 58
" " repaired..... 15
Halls cleaned and disinfected.....124
Hides, damaged, removed..... 2
" washing of, discontinued. 1
Hogsheads, filthy, removed..... 3
Hydrants removed 3
" basins repaired..... 37
Ice cutting of filthy pond,..... 2
Leaders constructed 38
" extended and repaired 306
Lime burning discontinued 1
Lots vacant, cleaned.....213
" " ponds on, drained..... 48
" " " " connected with sewer 72
Lots vacant, filled and graded.....208
Manure removed.....929
" vaults cleaned and disinfected .. 78
" " constructed 839
" " repaired and covered..... 93
" " use of, discontinued..... 7
Markets and slaughter houses cleaned .. 13
Milk, sale of, discontinued..... 1
Noise excessive, discontinued..... 2
Owners' or agents' names posted in tenement houses.....523
Phosphates, manufacture of, discontinued 2
Pipes, soil from privies, obstructions in, removed 537
Pipes, soil from water closets, obstructions in, removed 87
Pipes, soil, repaired 64
" " trapped..... 13
Pipes, waste, extended and repaired.....221
" " obstructions in, removed.. 5
" " trapped 54
" supply, leaking in house, repaired.106
" " " to hydrants, rep'rd, 40
Premises cleaned.....916
" fumigated or disinfected 14
" repaired 43
" vacated 31
Privy-houses, cleaned and disinfected . 20
" " repaired... 130
" " removed..... 13
" vaults, (water tight), constructed..236
" " emptied and cleaned 7793
" " disinfected.....8058
" " filled.....1818
" " repaired and flushed 48
" " ventilated 9
Rags, filthy, removed..... 7
Railings made and (repaired)..... 57
Roofs and roof leaders cleaned 35
" leaky, repaired 58
Scows, offal, removed..... 2
Scuttle-ladders provided and secured... 89
Sewered privies or water closets const'd,2016
Sewer connections to cellars, areas and yards, constructed..... 58
Sewer connections to cesspools construct'd 19
" " " hydrants and leaders constructed, ...608
Sewer connections to breweries, factories, etc., constructed 5
Sewer connections to markets, ice boxes, etc., constructed 7
Sewer connections to sink and waste pipes constructed 493
Sewer connections to stables and manure vaults, constructed 125
Sheds, wood houses, etc., cleaned,..... 9
" " " " repaired..... 4
Shutes, coal, repaired and covered..... 26
" use of, discontinued and closed .. 1
Sidewalks cleaned..... 89
" graded and flagged..... 9
" obstructions on, removed..... 12
" regraded and repaired 414
Sinks, (in house), constructed 4
" " " removed 1
" and boilers repaired 15
Skylights made and repaired. 7
Slaughter-houses repaired..... 1
Slaughtering, business of, discontinued.. 8
" of diseased cattle forbidden 1
Spaces enclosed and covered..... 2
Stables cemented and repaired..... 22
" cleaned and disinfected.....151
" constructed..... 2
" drained..... 5
" removed..... 3
" straw used as bedding in, removed 45
" yards of, cleaned..... 93
" " " graded..... 6
Stairways cleaned and repaired 36
Stands for fire-crackers and fruits removed 2
Steam-pipes, waste from, properly drained 2
Stoops repaired..... 57
Streets cleaned..... 71
" obstructions in, removed..... 44
" repaired..... 3
Swine removed.....430
Tank, supply, removed..... 1
Urinals cleaned and disinfected..... 4
" covered and repaired..... 2
" removed..... 2
Ventilating shafts in buildings constructed 6
Ventilators constructed 584
Walls made..... 4
" repaired 53
" and ceilings whitewashed or painted 96
Water supply introduced..... 10
" closets cleaned and disinfected....154
" " properly flushed..... 16
" " removed 31
" " repaired 129
" " trapped..... 2
Wharves cleaned 2
Windows, transom, constructed.....176
" closed..... 2
Yards cleaned and disinfected.....624
" flagged or paved..... 18
" graded and drained.....155
" water in, removed..... 84

Orders Vacating Premises.—The power of the Board to cause the vacation of dwellings has not frequently been used, and only to meet urgent cases. The following houses have been made the subjects of vacation—orders for the reason that their condition rendered them unfit for habitation :

485 and 487 Warren Street.
44 Columbia Street.
N. S. Hayward near Wythe Avenue.
1, 3 and 5 Park Avenue.
378, 380 and 380½ Pulaski.
101 North Fourth Street.
106 Hopkins Street.
127 York Street.
367 Macon Street.
10 Carroll Street.
138 Navy Street.

The following cellars occupied in a manner contrary to law were ordered to be vacated.

123 Fulton Street.
63 Hudson Street.
127 Partition Street.
149 Hamilton Street.
236 Prospect Street.
739 Myrtle Avenue.
101 Tremont Street.
570 Bedford Avenue.
686, 720 Hicks Street.
50 Green Lane.
93 Spencer Street.
11, 59 Delmonico Place.
297 Van Brunt Street.
495 Warren Street.
85, 99 Main Street.
66 Bergen Street.
85 Wolcott Street.
571 Union Street.
221, 253, 276 Conover Street.
262 North 7th Street.
49 Johnson Avenue.
153 Ewen Street.
26, 36, 38, 40, 42, 46, 54, 56, 58, 64 and 82 Atlantic Street.
2 Scholes Street.

Many of the premises ordered to be vacated belong to the tenement-house variety, and are the property of non-residents. In more than one instance no care was taken with the premises, and rent had not been called for, by owner or agent, for a considerable length of time. As would be expected, the property of non-resident owners is especially difficult to keep in sanitary condition, and is frequently found to be the nursery of disease.

Contagious Diseases—Disinfection—The report of transmissible diseases by physicians has been insisted upon and enforced by the Board,

under section 129 of the Sanitary Code. Postal cards were sent to all registered practitioners notifying them of the necessity to report, as follows:

"The Board of Health requests your attention to the following sections of the Sanitary Code, and gives notice that the Counsel of the Board is instructed to sue, for penalty, Physicians found violating the same.

SECTION 129. That every physician shall report to the Sanitary Bureau in writing every person (and the state of his or her disease, and his or her place of dwelling, and name, if known) which such physician has prescribed for, or attended for the first time, having a contagious disease, during any part of the preceding twenty-four hours: but not more than two reports shall be required in one week concerning the same person; but every attending or practicing physician thereat must, at his peril, see that such report is or has been made by some attending physician.

EXTRACT—SECTION 5 That the phrase "contagious disease" shall be held to include all persons sick, affected, or attacked by or of a disease of an infectious, contagious or pestilential nature (more especially, however, referring to the cholera, yellow fever, small pox, diphtheria, ship or typhus, typhoid, spotted and scarlet fevers.) but also including any new disease of an infectious, contagious, or pestilential nature, and also any other disease publicly declared by the Board of Health dangerous to public health.

Printed forms of Reports may be obtained at the Health Office."

A record is kept of all reported cases, and a copy of the death certificates is furnished by the Register of Vital Statistics of all deaths from such diseases. Whenever it is found by a comparison of these records, or in any other manner, that there has been a failure to report, the matter is investigated, and if not properly explained is referred to the attorney of the Board for prosecution. It is believed that the returns of the diseases of this class are now very generally made. Small pox especially is very closely followed up by special inspectors, assigned to the supervision and disinfection of localities wherein the spread of that disease is imminent. The plan in cases of reported small pox is, in the event of confirmation, to direct disinfection and local vaccination. When the cases are convalescent, as well as after death or removal to the hospital, fumigations by sulphur are practiced. The policy of the department is to remove no cases of small pox, when quarantine can be adopted with safety to the neighborhood. Since this course has been pursued, there have been fewer attempts to conceal the disease on the part of families and their attendants.

If removal is unnecessary and action by the board is recommended, an officer is sent to practice disinfection, and to instruct the attendants how to cleanse the clothing, etc., and obviate the spread of the disease. The following circular has been printed in English and German for general distribution.

"To prepare for the apprehended invasion of cholera, and the usual increase of sickness during the hot weather, the Board of Health publish the following memorandum on disinfection. Cleanliness is the best preventive of disease. Whenever practicable, the abundant use of water is better than disinfection. Disinfectants have the power of destroying the cause and of arresting the spread of most epidemics and contagious diseases. The rules for disinfection recommended by the Board of Health are effectual, simple, and are not expensive. They have been thoroughly tested, and are in accordance with the latest experience. A general observance of them will do much to arrest and prevent infectious and epidemic diseases as well as the ordinary diseases of summer.

"*Rules for Disinfection.*—Privies, water closets, drains, sewers, gutters, collections of decomposing matters, etc., may be disinfected by the following solution: to ten gallons of boiling water add ten pounds of sulphate of iron (copperas) and one pint of crude or impure carbolic acid, and mix thoroughly. This solution will cost eight to ten cents a gallon, less per barrel. To prevent infection of water closets and privies, and to destroy odor, pour the solution into the pan or vault three or four times a day, at the rate of one pint for every four persons. Keep a little of this solution in the chamber vessel used by the sick. Extensive

masses or surfaces of putrescent material, drains, ditches, etc., may be disinfected either with this solution or dead oil (heavy oil of coal tar). Coal tar may be used as a paint upon the walls of cellars, stables and open drains. Lump lime is useful as an absorbent and dryer in damp places. Tenements, factories, basements and closets should be frequently whitewashed.

"*Rules for fumigating with sulphur.*—Rooms, bedding, carpets, clothing, etc., infected with cholera, small pox, scarlet fever, etc., the sick having recovered or been removed, should be disinfected by sulphurous acid, generated by the burning of sulphur. Whitewash the walls; remove a board the whole length of the floor to allow the fumes to penetrate under the floor, upwards behind the plastering of the walls, and between the ceiling and floor above; hang the bedding, etc., upon ropes stretched across the room; close every window and door; then ignite one or two pounds of sulphur with a little alcohol, placed in a saucer set in a plate containing water. Every person must immediately withdraw from the room. Keep the room closed eight or ten hours, then open and ventilate thoroughly. The sulphurous acid with the whitewash forms sulphate of lime, itself a good and permanent disinfectant. The above proceeding obviates the necessity of burning bedding, etc. The rooms of all persons sick from epidemic or contagious diseases should be kept very clean and open to the external air as much as possible. The clothing and bedding should be frequently changed, and well washed with boiling water after being moistened with solution of carbolic acid. The clothing and bedding while in use, and the carpets, floors, walls and ceilings should be sprinkled once or twice a day during sickness and convalescence with a solution of carbolic acid. A solution of carbolic acid well adapted to all such uses is sold by most pharmacists, and may be easily made by shaking together in a bottle, the impure carbolic acid and water in the proportion of a teaspoonful of the carbolic acid to a pint of water. This is best applied by a sprinkler, but may be well applied by dipping the end of a common dust brush into the solution contained in a dinner plate, and throwing it off the brush on to bedding, carpets, walls, &c.

"The Board of Health publish the following important information. Dr. John Simon, Chief Medical Officer of Great Britain, writes: 'It appears to be characteristic of cholera, not only in its developed and alarming form, but equally of the slightest diarrhœa which the epidemic can produce, that all matters which the patient discharges from his stomach and bowels are infective, that the patient's power of infecting other persons is represented almost or quite exclusively by those discharges; that they are comparatively non-infective at the moment when they are discharged, but afterwards, when undergoing decomposition, acquire their maximum infective power; and if they be cast away without previous disinfection, they impart their own infective quality to the excremeutal matters with which they mingle in filth—sodden earth, or in depositories and conduits of filth, and to the effluvia which those excremental matters involve; that if the infective material, by leakage or soakage from drains or cess-pools, or otherwise, gets access, even in the smallest quantity, directly or through porous soil, to wells or other sources of drinking-water, it can infect in the most dangerous manner, very large volumes of the water; that the infective influence of the choleraic discharges attaches to whatever building, clothing and like things have been inbued with them, and render these things, if not disinfected, capable of spreading the disease.'"

For the removal of a case of contagious disease to the hospital, the concurrent recommendation of two inspectors is necessary; and the removal is supervised by one of them, in order that as little danger as possible may attend it. Funerals after deaths from small pox must be conducted without delay, and these also are superintended by an officer of the Board. Infected bedding and clothing are destroyed on the written recommendation of an inspector. An officer from the sanitary company has been detailed to the duty of superintending funerals, practicing disinfections and the destruction of infected articles. Appended is a summary of the work thus performed:

1873.	Disinfections.	Fumigations.	Removals.	Funerals.	Bedding Destroyed.
May,	3		18		1
June,	18	1	26		
July,	4	2	4	1	
August,					
September,	7	5			1
October,	3	2	2		
November,	6	6	2		
December,	7	6	6		2

1874.	Disinfections.	Fumigations.	Removals.	Funerals.	Bedding Destroyed.
January,	4	4	2		1
February,	20	17	3	1	2
March,	40	25	6	4	6
April,	19	12	1	1	2
May,	32	19	5	1	2
June,	35	27	4	2	5
July,	29	17			3
August,	4	1	1		
September,	21	13	1	1	4
October,	80	14	1	4	2
November,	65	30	12	5	4
December,	86	34	13	7	8
	483	236	107	27	43

The premises where diphtheria and typhoid fever prove fatal are closely investigated, and against very many of them orders for sanitary improvement have been issued; and for a time every reported case of typhoid fever was made the basis of domiciliary inspection. For the better instruction of those among whom the disease prevailed, the Board ordered the printing of the accompanying circular.

How Diphtheria is Spread.—I. Children sick with this disease communicate it to others, by their persons: by poisoning the air of their sick-room; by their secretions and discharges, especially those that come from the mouth and nose in the act of coughing, spitting and sneezing. II.—Children who are recovering and well enough to be out at play, or to return to school, are for a variable period the certain bearers of contagion on their persons and in their clothing. III.—The sick-room, its furniture, carpets, bedding and upholstery, as well as the clothing worn by the patient, may for months hold the contagion and convey it to subsequent occupants. Those who nurse the sick, even, may spread the disease by their clothing, soiled handkerchiefs and the like. IV.—Diphtheria, in all years, is a disease of certain localities in Brooklyn; but, in the present year, it has spread over new districts and has become *epidemic.* To the agencies of such known causes as are mentioned in the former paragraphs, (I., II and III.,) there are now added those unknown causes, called "epidemic influences," which produce the increased and alarming prevalence of the disease.

How Diphtheria may be Checked. I.—Children sick from diphtheria, or simply ailing from diphtheretic "sore throat," and also those who are getting well from this disease, should be "quarantined" that is, removed and kept apart from all other children. No person, old or young, should unnecessarily enter the apartment occupied by a contagious patient. The danger from infectious particles arising from the bodies of the sick, and from articles in use by them, should be guarded against by rigid cleanliness of person, by the prompt removal and cleansing (or destruction by burning) of soiled articles, and by a free use of disinfectants. II.—The rooms, clothing and bedding in use by the sick should always be disinfected, and when the patient has left the sick-room, it should be closed, (the furniture, &c. remaining therein,) and thoroughly fumigated by fumes of sulphur, whitewashed and aired before it is again occupied. III.—The occurrence of diphtheria in a house should lead to an immediate inspection of all possible sources of contagion *within the house;* trace to its source every foul smell, whether from obstructed or leaking soil-pipes, from water-closets and wastepipes, imperfectly trapped or defective at the joints; from cellar-air tainted by forgotten and decomposing "rubbish," or by the exhalations of a lot filled in with ashes mixed with garbage and street-sweepings; or from apartments filthy, over-crowded and ill-ventilated *in the yard;* remove all filth and decomposing substances, clean and disinfect foul-smelling privies, cesspools and cisterns; clean and fill disused cesspools and old privies; these latter are very numerous in this city and an especial source of danger. IV.—How shall the unknown epidemic influences be met? By giving the children wholesome surroundings at home and at school; by promoting their general health by exercise, etc., and by removing all depressing agencies; but especially by enforcing cleanliness and pure air, which are the deadly enemies of all contagion. Prevent the children from attending schools that are over-crowded, over-heated and unventilated, and whence they return with pallid faces and

aching heads. Purify the air of the home and rectify defects of drainage, &c., as pointed out in the last paragraph, (III.)

Additional Precaution—Diphtheria frequently begins in a mild form, and may pursue its course without serious illness: therefore, for the safety of schools and families, every child suffering from at attack of sore-throat, cough or catarrh, should receive the attention of a physician without delay.

The oversight and sanitary control of contagious diseases have exacted a large share of the attention of the inspecting officers and vaccinating physicians, when those were on duty. The interruptions of regular duties were so frequent and serious that in June, 1874, an assistant inspector was assigned exclusively to this branch of the service, and was known as "the inspector of contagious diseases." The appended summary of the number of official visits or inspections of premises or persons, made in consequence of reported cases of disease, indicates in some degree the extent of this work.

NUMBER OF INSPECTIONS OF REPORTED CONTAGIOUS DISEASES.

Small Pox,	692
Scarlatina,	73
Diphtheria,	303
Yellow Fever,	4
Cholera,	4
Typhoid and Typhus Fever,	118
Cerebro-spinal meningitis,	3
	1197

The extent and character of the epidemic influence as it has prevailed during the past two years, may be judged by the accompanying summary of the reported cases of contagious diseases; the fatality of these diseases will be found elsewhere.

	Small Pox.	Scarlatina.	Diphtheria.	Typhoid fever	Typhus fever.	Cerebro-spinal meningitis.	Total.
January, 1873,	87	51	12	12		15	177
February, "	62	39	19	1		17	138
March, "	50	80	19	7		22	178
April, "	82	62	13	4	1	19	181
May, "	65	56	8	7	2	10	148
June, "	45	67	1	4	1	5	123
July, "	7	54	8	7	1	5	82
August, "	1	49	7	19		3	79
September, "	2	42	22	32		4	102
October, "	10	96	54	58	3	4	225
November, "	3	144	70	28		4	249
December, "	12	190	86	28	2	7	325
	426	930	319	207	10	115	2007

	Small Pox.	Scarlatina.	Diphtheria.	Typhoid fever	Typhus fever.	Cerebro-spinal meningitis.	Total.
January, 1874,	7	181	89	6	1	5	289
February, "	22	141	126	18		5	312
March, "	19	251	107	11		9	397
April, "	15	246	102	12	1	6	382
May, "	27	250	78	6		10	371
June, "	23	195	77	5		1	301
July, "	8	142	43	8			201
August, "	5	107	89	16	3	5	225
September, "	13	108	90	46	2		259
October, "	12	143	138	28	1	1	323
November, "	32	325	318	32		3	710
December, "	85	359	394	26	1	2	867
	268	2448	1651	214	9	47	4637

Vaccination.—The prevalence of Small Pox, of a virulent type, in certain sections of the city, especially in the eastern district, has necessitated the employment at intervals, of a considerable corps of vaccinating officers. This prevalence, threatening at times to assume epidemic proportions, together with the fact that great havoc, suffering and pecuniary loss have been of late years caused by unexpected and fierce inroads of small pox in Philadelphia, Boston, New York and other large American cities, induced this Board, during the legislative session of 1874 to favor the enactment of a law which would give to this city an efficient and economical department of vaccination. This legislation was not secured, but it does not require prophetic vision to forsee that, in the presence of a population such as we have, an apathy and neglect of the proper precautions, the time must come when a more systematic prevention of small pox than is now possible must be put in force.

Economy, not less than philanthropy, appeals for the establishment of a permanent and responsible vaccine institution; it is so much cheaper to prevent an epidemic than to fight against it. It is estimated that Philadelphia spent two hundred thousand dollars in 1872 in the care of its sick from small pox, and that its loss in trade and industry was over five millions of dollars. A law to encourage vaccination passed in 1860, gives a certain amount of power to school boards, but being simply permissive, it has remained a dead letter on the statute books; one of its provisions, that might be used to advantage in times of special exposure, authorizes that unvaccinated children may be excluded from the public schools; the public funds may be used by said boards for the employment of vaccinating physicians.

Dependence upon the general haphazard custom, which puts off the protection until the calamity is present, invites the recurrence from time to time of a pestilence such as in 1872 wantonly destroyed the lives of 737 persons, more than half of them under five years of age and probably unvaccinated. In New York there were 929 victims the same year,—a veritable harvest of death. Public vaccination is the approved means

of prevention by which alone a community can protect itself or stamp out lurking contagion. This is usually accomplished by systematic block and house-to-house visitation in the day-time; to meet the needs of those who are absent from home all day, certain localites are indicated whereat vaccinators may be found in the evening. This expedient was tried with some success in 1874, the police precincts in infected sections being the localities designated. Schools and factories in exposed positions, are also offered protection. All of which work is done without charge.

Vaccination was first practiced in this state in 1800, about four years after its discovery. Since then its claims as a means of protection against small pox have been frequently challenged, but to-day it stands higher in the opinion of those capable of judging than ever before; argument is not at this time necessary. It may be well to recite a few illustrations;—they cannot be too often repeated—as of Copenhagen, where for thirteen years after the practice of vaccination had been established, there was not a death from small pox. Before the time of Jenner nearly all the crowned heads of Europe were scarred by that disease; Mary, wife of William III, died of it.

In London, in the last half of the last century, out of every 1,000 deaths 98 occurred from small pox; the blindness, deafness, and premanent mutilations among those recovering were everywhere met; now the average deaths range at a little more than one-tenth of the former rate. In other words, if vaccination were blotted out a pestilence of small pox would carry off yearly 3,000 out of every million inhabitants, instead of 160 as at present.

The benefits of re-vaccination are shown in the fact that the Prussian Army has now two deaths annually against 104 (in 1833) at a time when the vaccination of infancy was relied upon as sufficient.*

In the Bavarian army, during 14 years after vaccination became compulsory, not one death by small pox, and not one clear case of the disease occurred. New York city, with only limited powers reduced the small pox mortality from 929, in 1872, to 117 in 1873. In our own city we find a like experience; certain wards greviously afflicted in 1872, and most thoroughly visited by the vaccinating officers, have, during the recent prevalence of small pox in the city, had almost entire immunity from it; not one fatal case among those resident in those sections in 1872. It has been well said that this grand discovery of Jenner "has saved more pain, want and misery than any other one gift of Providence since the world began, and the rejection of it is high treason against humanity."

Both here and elsewhere the fatality and virulence of small pox have been more intense than formerly; to compensate this there appears to be a greater susceptibility to vaccine. Our vaccinators have repeatedly found that persons bearing the marks of a previous attack of small pox have been vaccinated with entire success—a result not ordinarily obtained. Here or elsewhere, small pox has its harvest season in winter, the close condition of our homes, schools, shops and cars favoring the communication and growth of contagion. It is not on that account to be considered *natural* for

* In 1860, there were vaccinated 69,076 soldiers of the Prussian army; of this number 57,335 bore the marks of former vaccination; 44,193 took well, 8,256 took imperfectly, and 16,047 failed to take; these last were a third time vaccinated, with 5,577 successes and 11,650 failures; during the following year there were in this great body of men 4 cases of small pox and 14 of varioloid, and none of these occurred in soldiers who had been successfully revaccinated.

the disease to prevail in cold weather, as is sometimes rashly stated; that which is natural is for it to absent itself all the year round when it has been properly exorcised. In proof of this, witness the recent fortune of Boston; during two years, 1872 and 1873, there was in that city an epidemic which swept away over 1,000 lives; the citizens were aroused, a change in administration was made, and extraordinary efforts were put forth; the disease was subdued, and with this signal result—the bills of mortality for the following year, 1874, show not one death by small pox, (see Sixth Mass. Health Report). It cannot be doubted that the time will come when public opinion will hold governments accountable for the long continuance of small pox in a community and for the slaughter of innocents caused thereby.

Drainage, Sunken Lots.—A system of sewers has been measurably provided, and is constantly growing, but drainage, properly so-called, this city has none. It is very commonly supposed that, when a district has been sewered, it has by that act been drained; but according to the present acceptation of terms, sewerage and drainage are materially different, both as to their means and ends. Sewerage has for its object the reception and discharge of surface water from streets and lots and the fluid waste of buildings; this requires a conduit that is water-tight, in order to prevent the escape into the soil of its contents (to which the term "sewage" is applied.) Drainage, on the other hand, implies a system of underground pipes of porous material, so fashioned and laid as to receive and carry off the water that percolates into them from the soil only, the design being the prevention or remedy of soil-saturation.

But what, after all, are the evils arising from an excess of water in the soil that render drainage a measure of paramount importance? These are, in the first place, the perils to life and health,—diseases which frequently slay, which rob the life of many fruitful hours and days, which inflict untold misery, pain and want, and which so depress and enfeeble the body, that it is sure to fall an easy prey to epidemic influences of every name. Among the diseases that are unmistakably promoted by a damp soil, are malarial fevers, consumption and diphtheria; with regard to the former it is superfluous to multiply examples—they are so numerous and well recognized. Let it suffice to call to mind the instance of the town of New Utrecht, in this county, as showing at once how sickly a district may become wherein stagnant ponds abound, and how greatly an intensely malarious section may be improved by even a partial system of drainage. Physicians state that fevers have considerably diminished, and the store-keepers are wont humorously to complain that their sales of quinine and fever-remedies have fallen off since the drains were laid. Typhoid and other specific fevers spring up under the same conditions, and in New York city, where the areas of soil-saturation have been surveyed and mapped out, it has been found that "the old obstructed water-courses mark the inevitable line of disease and death. In a large hotel located over one of these courses, repeated cases have occurred of typhoid fever, followed by death. A number of the most costly dwellings in certain portions of the city have been abandoned by the owners as residences after the death of members of the family from this cause." (Report of the Board of Health of New York, 1870.) Consumption is another disease that is fostered by a cold, water-logged soil; an analysis of the deaths from that cause in Massachusetts shows that its distribution is very unequal, in some localities being two and even three times the number found in others, although their size and character of

population are the same. Now, according to the researches of Dr. H. I. Bowditch, 50 out of 55 districts, where consumption is in excess, were found wet by contiguity to marshes or ponds, or by reason of low springy soil. That such lands are cold, and tend to produce a relatively chill climate, was long ago proved by experiments in connection with drainage for agricultural purposes; the temperature at the depth of seven inches on drained land being ten degrees higher than that which was undrained in the immediate vicinity. Neither plants, cattle or men thrive on a cold, damp soil.

Diphtheria also, together with other zymotic diseases, is to some extent engendered by exposure to a soil unduly moist, but whether by this alone without a certain addition of decomposing filth is not clear. However this may be, it is well known that decomposition and the generation of disease-germs take place most rapidly in the presence of moisture. A single instance may be given in this place of the fatal consequences of imperfect drainage: it is reported that an entire family, including the servants, residing in an expensively built house on Fifth Avenue, in New York city, died of diphtheria; and in tracing up the causes of the disease, it was found that the house was located over an old, obstructed water-course. The results are not always fatal: in Montreal, a fine mansion, built on a bed of clay, was well nigh abandoned on account of the escape into it of vile odors which no expedient of the plumbers could correct; at last a trench was dug down to the foundation and into the clay, giving vent to a quantity of dark fetid water, and freeing the house from its odors; but the two laborers who made the trench were attacked soon after with diphtheria, from which they however recovered. Our own inspectors have found in a multitude of cases that fatal diphtheria has occurred in localities where the drainage was manifestly defective.

Negative evidence of the evil effects of soil moisture is furnished in the improved healthfulness of certain English towns, since the introduction of drainage and other works designed to improve the public health. Two hundred years ago London was the most unhealthy capital in Europe; but now, thanks to its extensive sanitary improvements, it is reported to be the most healthful, and four thousand lives are annually saved as compared with the period preceding the introduction of these measures. In 1865, the English authorities caused an inquiry to be made in reference to certain towns where drainage works had been constructed, and it was discovered that there had been a reduction of the mortality from all causes, the decrease of consumption and fevers being most noticeable.

Another evil in undrained lands—and one which is most keenly felt—is pecuniary loss. It was this, no doubt, rather than the sanitary requirements of the case that caused the introduction into our city charters, both old and new, of enactments commanding that the natural water courses be observed and preserved in the construction of our "great improvements" by streets and avenues.* But pecuniary gain (that of the contractors) has as a motive overpowered other motives, and we behold as a result vast areas of city lands needlessly covered and saturated with water, constituting what are known as our ponded and sunken lots. In regard to these our great and primary necessity is drainage by which to restore the natural water courses and to prevent, what has taken place

* The new charter at Title XXIII, Section 1, reads: "In all cases where the Common Council shall decide upon the grading and paving any street or avenue, they shall cause a sufficient number of culverts or drains to be constructed under such street or avenue, as may be necessary to carry off the surface water of the lands, which shed their water across the line of such street or avenue."

in too many localities, the accumulation of water by the thousands of gallons on lots at some time destined to be occupied by dwellings. And we propose to show in a few lines that it will be profitable to drain. Intelligent people do not willingly choose a residence over lands that are known to be saturated with water and manifestly malarious, and capital shuns any investment in them. But see what has taken place in New York since their drainage law went into operation: "Two years ago there were observed whole blocks of unimproved land covered with stagnant, ponded water, which had accumulated by the filling in of streets and avenues across these original water courses, for which no outlet had been provided neither a pond or rivulet can be discovered, but in place thereof a dry, well drained surface upon which first class houses are now being constructed. These low lands, many of them marshy, had long been the terror and dread of a sparsely settled population whose health and life were in constant jeopardy from malarial exhalations. Capitalists could hardly be induced to purchase at any figure, and builders avoided these localities as useless for the investment of quick producing capital." (Dr. Moreau Morris on "Defective Drainage.") Lots in situations above alluded to that were covered with a depth of six to ten feet of water, and could not be sold at any price have, since the completion of an adequate drain, increased nearly fourfold their nominal value, and are in active demand. It is not too much to expect that in our own city similar "sunken lots," as they are called (they are really the enclosures of raised thoroughfares) may be, by similar means, rendered at once salable and habitable. No one should for a moment suppose that any amount of filling with earth will remedy this kind of difficulty; the water may be thus put out of sight, but it has not been removed, and its power to injure has not been extinguished. Indeed this is a remedy which reënforces and intensifies the trouble, by enlarging the bed in which fever-germs and miasms may generate.

The great sanitary defect of this section of Long Island, arising from the physical conformation of its territory is imperfect drainage,* and its great necessity is a comprehensive and thorough system of drain-works laid under direction of an engineer. This condition and want has long been recognized by physicians, and the Medical Society of Kings County, having carefully considered the subject, determined to ask legislation, and the following bill was introduced in 1874:

"SECTION 1.—Whenever it shall appear to be neccessary for the protection of the public health that any part or parcel of lands within the corporate limits of the City of Brooklyn, needs to be drained by other means than by sewers, and it shall be so certified by the Sanitary Superintendent, and said certificate is filed among the records of the Board of Health of said city, the said Board shall direct that the same be done by and under the direction of the department of the Board of City Works.

"SECTION 2.—All parts or parcels of land lying below the levels of the sewers adjacent thereto, upon which surface-water remains stagnant, or through which water courses have or at present do run, may be so drained by a properly constructed blind drain, which shall be carried along such natural water course, until it can be made to enter any sewer at its proper level, or if such sewer cannot be reached, it shall be carried to the adjacent river.

"SECTION 3.—All lands benefited by said drain directly or indirectly, for a distance from said drain, included between the adjacent streets and avenues thereto, shall be liable to assessment thereto, pro rata in proportion to the direct or indirect benefit derived from construction of said drain, the assessment to be made and collected as other assessments, or the public benefit are provided for, the assessment to become a lien upon the property assessed as in like cases provided."

This bill did not become a law, but sooner or later that law, or some-

* A report of the Sanitary Committee on the principal causes of the high death-rate of Brooklyn, printed in this report, gives further details on the subject. See Appendix.

thing more adequate, will be demanded by the public voice, just as that voice has, when public opinion has been convinced of the necessity, demanded sewers and pure water for reasons of comfort and economy. The accompanying summary indicates that some improvement has taken place in respect to ponded lots; over eighty per cent. of these are classed as "artificial," and as a rule have been consequent upon the laying out of streets or some other public improvement.

STATEMENT OF SUNKEN AND PONDED LOTS, THEIR LOCATION BY WARDS, HOW CAUSED AND HOW ABATED IN CONSEQUENCE OF ACTION BY THIS BOARD.

Ward.	Natural.	Artificial.	Filled by owner.	Sewered by owner.	Remarks.	Total.
7	...	1	1	...		1
8	...	1	1	...		1
10	1	5	4	2		6
12	...	5	4	...	1 sewered by Board of City Works.	5
13	...	1	1	...		1
14	2	8	6	2	1 sewered by Board of City Works. 1 filled by Board of Health,	10
15	1	22	16	7		23
16	2	14	10	8		16
17	3	10	3	8	1 filled & sewered by B. C. W. 1 filled & sewered Bd of Health	13
18	2	6	6		1 filled & sewered by owner & Board of City Works.	8
19	...	4	1	2	1 sewered by B. C. W.	4
21	1	6	2	4	1 sewered by B. C. W.	7
22	5	3	1	4	3 filled & sewered by B. C. W.	8
23	1	...	...	...	1 sewered by B. C. W.	1
25	...	4	3	1		4
	18	90	59	37	12	108

Dangerous Ponds.—In many instances the sunken lots already alluded to are so situated that they receive and retain an amount of water sufficient to endanger life by drowning. The lives of not a few children have been sacrificed while at play near these bodies of water, or by breaking through the ice covering them in cold weather. This Board has from time to time communicated to the Common Council the principal facts relating to these dangerous places. Among the ponds declared to require attention are the following:

Between Atlantic, Herkimer, Utica and Rochester Avennes.
Between Atlantic, Herkimer and Howard Avenues, and Cooper Place.
Between Atlantic, Herkimer, Utica and Schenectady Avennes.
Between Pacific, Dean, Utica and Rochester Avenues.
Between Atlantic, Dean, Howard, and Saratoga Avenues.
Between Jamaica Parkway and Dean, Howard and Rockaway Avenues.
Between Jamaica Parkway and Utica and Schenectady Avenues.
At the junction of Sumpter and Saratoga Avenues.

At the junction of Douglas Street and Hunterfly road.
Between Yates, Floyd, Lewis and Stockton Streets.
East side Troy, and near the city line.
East side Kingston, and near the city line.
Brooklyn Avenue, near the city line, (5 ponds.)
Brooklyn Avenue, between Douglas and Degraw Streets.
Between Buffalo, Rochester, Sackett and Degraw Streets.
Between Lynch, Middleton and Harrison Streets, and Broadway.
Between Schenck, Steuben, Willoughby and Myrtle Avenues.
Between Third and Fourth Avenues, Baltic and Douglas Streets.
Between Third and Fourth Avenues, Union and Douglas Streets.
Between Third Avenue, Nevins, Union and Sackett Streets.
Between Third Avenue, Nevins, Butler and Douglas Streets.
Between 15th Street, Hamilton and Second Avenues.
Between 16th Street and 8th and Ninth Avenues.
Between 14th, 8th, and 9th Avenues.
Between 16th, Prospect, and 8th and 9th Avenues.
Between South side Prospect, Sixth and Seventh Avenues.
Between North side 18th Street, Sixth and Seventh Avenues.
Between Third and Fourth Avenues, Carroll and 3d Streets.
Between Third and Fourth Avenues, 6th and 7th Streets.
Between Fourth and Fifth Avenues, 4th and 5th Streets. (A child has been drowned at this place.
Sixth Street, corner of 7th. Avenue (three children here drowned in 1874.)
Seventh Street, between Fourth and Fifth Avenues.

Deposition of garbage on vacant lots.—The monumental evil of filling lots, or reclaiming marsh lands, by depositing thereon matters liable to decompose and putrify, has existed almost unnoticed for years. The Board, by a resolution passed June 20th, 1873, very soon after its inauguration, declared its opinion that this practice was "not only detrimental to health, but a source from which disease and increased mortality must result in the future." This principle the Board has not failed to reiterate on all proper occasions, and it has sought to bring to punishment the violators of those sections of the Sanitary Code, especially section 81, which forbid the nefarious practice; but the arrests which the police have made have not generally resulted in the serious punishment of the offenders. Suspension of judgment, repeated adjournments, or a slight fine, were the awards of the courts for dumping garbage on vacant lots. The use of street-sweepings as a filling for sunken lots called forth the following communication addressed to the Common Council:

"This Board would respectfully but earnestly urge that the sanitary interests of the city demand that your honorable body shall observe the requirements of section 81 of the Sanitary Code, in making contracts for cleaning streets for the coming year. We desire to call your special attention to the fact that street dirt and filth has been chemically analyzed by the highest authorities in sanitary science, and it has been found that about one-half its bulk is composed of putrescible organic matter. This material is decomposed by heat and moisture, and converted into poisonous gases, which are known to be efficient agents in the production of disease in cities. Your honorable body has already, as we understand, decreed that the deposition in vacant lots of ashes mixed with garbage is an offence against the public wellfare, in which material the amount of organic

matter does not ordinarily exceed twelve per cent. It is to be hoped, therefore, that the greater evil of filling in lots with street-sweepings which contain over four times that proportion of unwholsome matters, will not receive your sanction."

Special reports of the Sanitary Committee to this Board, made November 17th, 1873, and January 8th, 1874, consider the relations of the improper filling of lots to the increased mortality rate in this city. The report of the latter date accompanies this report.

Privies and Cesspools.—The disposition of excrement and house-waste on occupied premises, opens a question of vast and vital importance, and a question of great difficulty; for, although it has for years occupied sanitary attention, it has not yet received a satisfactory, rational solution. This want of clear knowledge has begotten a want of system which makes it inevitable that this matter shall be a constant source of offence and complaint. And in most crowded cities, Brooklyn among the rest, the privy nuisance has grown, year by year, to formidable proportions; and owing to the ignorance, carelessness, and willfulness of owners and occupants, it has assumed a variety of disgusting shapes that baffles description. The amount of supervision which privies and cesspools already in use have required during the term of this Board, is illustrated by the fact that of the 58,405 inspections reported by inspectors and sanitary police, over 19,000, or about 30 per centum, relate to those subjects; and of the 13,510 orders and notices issued, there were 8,422 in whole or in part directed to the amelioration of the back-yard nuisance. The first objective point of the Board's action in this respect, was May 31st, 1873, to enforce that section of the Tenement Law, requiring every building coming under its provisions, when situate on lots in front of which there is a street sewer, to have water-closets or sewered vaults, and the use of cesspools was disallowed in, under, or connected with, any such (tenement) house, except when it is unavoidable. About a year later, April 6th, 1874, the Board took a further step, and by the adoption of a new section to the Sanitary Code, declared in effect, that the old-fashioned yard-privy, wherever located, is obnoxious to the general health, and must be done away with, and replaced by sewered vaults or water-closets, when contiguous to sewered streets, and when not, by yard-vaults, so constructed as to be water tight. Under this ruling, cesspools remaining on premises connected with the sewer are adjudged unnecessary and unhealthful, and should be discontinued and filled.

A measure so radical as this is justified by the highly pernicious character of the nuisance against which it is leveled. The old-fashioned yard-privy exists by the thousands, not only in unsewered sections, but also on lots where the houses and water-closets are connected with the sewer. These vaults are commonly made with cobble-stones, slightly cemented together, without tight bottom, and sufficiently porous in all parts to admit of the rise and fall of soil-water, so that with each fall more or less of the soluble contents—which hold the dangerous elements—of the privy, are carried into the soil further and further, until a considerable extent and depth of soil is saturated with night-soil filth. This pollution of the soil may so extend and intensify itself, that in time spots like these become the constant habitat of fever-germs, and worse than that, when a pestilence overtakes the community, they become the veritable spawning-beds of cholera and yellow fever.

In a legal sense, the possessor of land is vested with the ownership and

power to dispose of it as he pleases, but in another, larger sense, he simply holds it in trust,—for it must sooner or later pass to others,—and he may not so dispose of it that it shall become a source of danger to his neighbor, or successor. Now to those who do not recognize, or are unwilling to accept this precept, it must seem arbitrary to protect the soil against its owner; and the fact that many act contrary to this precept, makes the guardianship of the soil one of the first functions of a board of health.

From the department having the charge of sewers we obtain the following statistics: Of the 546 miles of streets in this city, 279 miles are sewered; total number of sewer connections made since 1859, 40,252. Of these 3,646 were made in 1874.

In connection with the disposition of excrement, it will be appropriate to note the advantages possessed by what is termed the "Dutch" system of sewers. The appended facts have been compiled from recent issues of the *Lancet*, *Sanitary Record*, and other foreign journals.

The method of Captain Liernur, of Holland, separates the storm and waste water from refuse water; these are carried off by a separate system of drains; both are kept separate from fecal and urinary excreta, which are removed by means of atmospheric pressure instead of water. To effect this each closet is connected with an iron pipe which enters an iron main-tube in the street, which in turn enters a street reservoir, but is shut off from it when not in action by means of a stopcock. Each street reservoir is in connection with a tank situated under the house containing the air pump engine by which a vacuum is constantly maintained. At certain hours men visit the main pipes, open the stop-cocks, and at once the excretory matters are sucked out into the reservoir, and thence into the tanks. Here, owing to its small bulk, it can with ease and without offense, be manipulpted, either by immedate distribution to the soil as manure, or by conversion into *pondrette* or human guano. Theoretically the scheme is perfect and its manifest advantages are—(1) by the constant vacuum maintained by the system, no sewer gas can find access to the houses; (2) it does away with the enormous quantity of water required for flushing the sewers; (3) as the sewage is not diluted with a vast amount of water, no expensive arrangements are required to utilize it, and (4) it affords to a certain extent a system of subsoil drainage. The scheme seems particularily suited for those places which have not a natural outfall for their sewage, or have not a sufficient water supply to flush their drains or where, as is the case of Cambridge, owing to the dead level little or no fall can be obtained, and where the sewage has a tendency, in consequence, to deposit in the sewers. The method of carrying off the refuse and surface water is also a chief feature of the scheme. The former is removed by means of impervious earthenware pipes, so that filtration or percolation is impossible. The surface water is carried off by means of small agricultural drain pipes, laid at a higher level than those which carry off the refuse water, they discharge into them, however, at certain intervals. The advantage claimed by the inventor for this arrangement, is that the water in the subsoil is kept at a permanent height above the sewer, and he thinks that so long as the subsoil water is higher than the sewer contents, all danger of pollution is avoided. The scheme has been tried for three years at Amsterdam in a portion of the town, and other Dutch towns are adopting it. At Leyden, it has been used on a small scale where it has proved to be "a complete success as regards the collection of excreta." It is stated that St. Petersburg is about to employ this system of sewerage in a large portion of the city. The inventor claims that not only will the sale of the poudrette pay all working expenses, but that it will afford a revenue upon the money invested; neither of which has been accomplished by any plan hitherto employed.

In several cities of Europe the excrement is purchased by contractors, who have the right to empty the vaults once a year; they convert it into a fertilizer, sometimes known as "Flemish manure," which finds a ready market. In Strasbourg the value of this commodity is rated at about one dollar of our currency for each inhabitant. Under our sewer-system this source of revenue is ignored and is supposed to be washed out to sea, when it does not remain in the harbor to clog up our docks or spread over low marsh-lands to be constantly agitated by the ebb and flow of the tide. The loss of water to the city for the purpose of flushing sewers and their con-

nections is immense, and the time must come when it will be necessary to economize in this direction, by the adoption of some less prodigal method than that now in general use in this country.

The Removal of Offal and Garbage.—The act to amend the charter passed June 1, 1874, transferred to this Board the power over the removal of night soil, offal and garbage, and gave authority to make contracts for a period not exceeding five years; the amount of money to be expended during the remainder of the year in the execution of the provisions of the act was limited to fifteen thousand dollars. In pursuance of this new obligation, a contract was duly entered into by George F. Swift and company, in August, with this Board; this contract is in operation at the date of this report. The specifications so far as they relate to the manner and method of garbage-collection are given below:

Specification One.—All carts and other vehicles for removing kitchen and other garbage shall be so constructed as to be water-tight and securely covered on the top, and shall not be used until first approved of by the Board of Health. They shall have prominently painted in white letters upon a black ground three inches in length, upon both sides thereof, the *full* name of the contractor, and the number of his district or ward, as the case may be, which name and number shall be plainly and intelligibly displayed, and always kept clean and exposed to public view when the carts are in use, and at all times subject to the inspection of any sanitary inspector, police officer or citizen. All such carts and vehicles shall always be kept clean, and shall be so loaded and driven that none of their contents shall fall or spill therefrom.

Specification Two.—Contractors shall call regularly at all dwellings and all other buildings and remove promptly, and in as cleanly a manner as possible, beyond the limits of the city, and dispose of the same without dumping in the city or in the waters of the Bay, or causing any nuisance, all kitchen and other garbage that may be offered, either on the sidewalk or in the front area or under the front stoop, and return the receptacles to the place from which received. They shall also collect and remove beyond the limits of the city all kitchen and other garbage which, by accident or otherwise, may have been put or left upon the sidewalks, courts, or alleys, by residents, occupants, or persons having charge of dwellings and all other buildings.

Specification Three.—The carts or vehicles shall be sent or accompanied by two persons, one of whom shall precede the cart and give due and adequate notice by the ringing of a bell at a regular hour through every street, lane, or highway to the occupants of all buildings that they are about to approach for the removal of kitchen and other garbage.

Specification Four.—No person engaged in collecting and in transporting kitchen garbage shall do, or permit to be done, anything in connection therewith that shall be needlessly offensive or filthy in relation to any person, place, building, premises, or highway.

Specification Five.—No deposit of kitchen or other garbage shall be made in any part of the City of Brooklyn, or upon any lot or open space lying within any portions thereof, nor upon any wharf, nor, except by special permit, from the Board of Health, upon any vessel lying at any wharf.

Specification Six.—Kitchen and other garbage shall not be kept in the vessel or removed in the same cart or vehicle with ashes and rubbish. It shall be removed twice a week during the months of January, February, March, April, November, and December, and three times week during the months of May and October, and daily during the months of June, July, August and September of each year.

The problem how to keep a city clean in respect of its putrescible animal and vegetable matters (mostly shop and house waste) has proved full of difficulty wherever undertaken. Dead animals have a certain value *per capita*, and their removal together with that of offal and night soil can be accomplished without expense to the city. The collection and removal of garbage in a proper manner is attended with especial difficulty, especially for the reason that the appropriation of funds is altogether below the sum necessary to meet the expenses of a service of this character and extent. The first difficulty is met in the long established habit of many citizens of

mixing ashes and garbage, and throwing them on the streets or some adjacent unoccupied lot. In June, and again in September, 1873, this Board requested the Board of Police to notify the citizens to keep their garbage in proper garbage vessels, separate from ashes. This measure was only partially successful, and mixed ashes and garbage were still deposited by the contractors on city lots; consequently, October 27, 1873, the following resolution was passed: "Resolved, that the honorable the Common Council be requested to provide ways and means either for the removal of mixed ashes, garbage and street sweepings beyond the city limits, or for the collection of ashes and garbage in separate carts so that both may become a source of income instead of expense to the city." The garbage service, under the contract of the Board of City Works, continued essentially unchanged down to the time, in August, 1874, when this Board was by the charter amendment already alluded to placed in charge of this matter. Some improvements have been instituted under the new contract, better carts are used, the ringing of the bell announces the coming of the collector, and the like, but the service is still the subject of complaint.

Streets and Street Cleaning.— When this Board came into authority the unclean condition of the streets and the anticipation of cholera caused much sanitary inquiry in this direction. In eight months of 1873, over 2,070 inspections of streets, gutters and sidewalks were made; during the year 1874 the number was 1,362. From a special report by Assistant Inspector Reed we quote the following:

"The object in paving a street, besides facilitating public travel, is, or at least should be to obtain the most thorough removal of all water falling thereon, and thus to preserve a dry subsoil, and at the same time prevent the lodgment thereon of street filth. This object is of course much better accomplished by the smooth than the rough or cobblestone pavement, for from the very nature of the surface of a cobblestone pavement, the water is considerably obstructed in its flow, and a part of it must either sink into the soil or evaporate; this pavement is very porous, by reason of the many interspaces between the stones, so that the waste will readily soak into the ground. Moreover the stones project a certain distance above the surface of the bed of the street, so as to give rise to a small depression or cup between every three or more stones. Now when we take into consideration the number of depressions of this kind that exist in a street, or the many miles of cobblestone-paved streets, we perceive what an amount of surface water may after rainfall be stored in these seemingly insignificant hollows; and how large a surface is presented for subsoil soakage.

"Another objection to the pavement is that it is difficult to clean and keep clean. The many depressions in its surface serve as convenient spots for the lodgment and collection of street filth. Indeed, it is only necessary to compare the general condition and cleanliness of smooth and rough pavements, to be convinced that the latter must be the more filthy. It does not suffice, in order to clean a cobble-stone pavement, to simply rake or hoe it over, as can be done with a smooth pavement. Even with brooms, it requires much care and labor to dislodge all filth from the surface, and unless brooms are used, at least one half of all filth remains behind after the street has received a cleaning, so called.

"From various analyses it has been ascertained that ordinary street-dust contains from 29.7 to 45.2 per cent. of organic matter. This organic matter consists largely of horse-manure; also various vegetable and animal matters, which are from time to time thrown into the street. Exposed to heat and moisture, street-dust undergoes decomposition, giving

rise to many offensive and deleterious vapors. Ground into fine particles by passing vehicles, it is carried by the ordinary circulation of the atmosphere into dwellings, and even to considerable distances. In order to appreciate the extreme offensiveness of street-filth and gutterage, it is only necessary to witness the cleaning of a street for the first time in the spring. The exposure of the mass of filth which has accumulated during the winter months, but which has been lying in a comparatively dormant condition, gives rise to odors of the most disgnsting and offensive kind. This shows the importance of thoroughly cleaning the streets at all seasons of the year. When we consider the extremely vile condition of the streets and gutters, especially in the narrow streets of tenement sections of large cities, we are inclined to accept the opinion that it contributes the summer disorders of these sections. In this connection we may refer to a practice which cannot be too strongly condemned, namely, the practice of using the dirt that is washed from the surface of the streets, and accumulates in the street basins—or "sewer sand," as it is called—as a bed in which to place the cobble-stones.

"The manner in which the contracts to clean our streets are executed, except a few of the principal streets, is a just ground of complaint, and is commonly regarded as a mockery of the tax-payers—an evil growing out of a time-honored system of indirection, not peculiar, however, to this city or period. Unbalaneed and ingenious contracts, and the non-enforcement of them, are so general, raat they are worthy to be called an Ameican institution. The streets are not cleaned as often as the contracts require. They are "hoed" over, when the brooms should be used. Without brooms the proper cleaning of cobble-stone pavements is impossible. The carts and other appliances of the contractors are faulty; but the most unwholsome of all the filth is often scraped into piles in the middle of the street, and then allowed to remain to be trodden and rolled down again to the level of the street.

That this was done and permitted very frequently, and even in midsummer, is attested by the reports of our inspectors. The streets of the wealthy and business sections receive more attention than those in the humbler districts—the working people—who especially suffer by neglect in this respect, and are at the same time least able to protect themselves. In another particular also are they wronged. The money which the city sets apart to pay for labor upon the streets too often does not reach the laborer, but is diverted into the pockets of those who are most cunning to devise means by which the least possible work shall be done.

Tenement Houses.—This city has not a disproportionately large population dwelling in tenement-houses, nor is it dense as in some cities. A systematic survey of eight hundred houses of this class, shows an average of less than six families to each house. The total number of such houses as defined by law is not known; they vary greatly in their construction, those newly built generally conforming with the law. They nearly all demand sanitary supervision. During the period of this report, 4794 inspections were made by the inspectors. This figure is partial, for the reason that some "matter or thing" on the premises is frequently recorded as inspected, instead of the tenement-house itself. A special report by Inspector Fisk supplies the following data concerning this class of buildings: "Of the defects of tenement-house construction, absence of ventilating means is the most pernicious and constant. Three and four-story houses are built, accommodating three, and, when double, four fam-

ilies on a floor, having hallways entirely destitute of ventilation. In the roof over the stairway, it is true, we generally find a grazed sky-light, but as this is kept permanently closed, it merely serves to furnish a very imperfect light, and is of no use as a ventilator. On entering one of these houses we speedily detect the presence of contaminated air, especially as we ascend to the second and third floors. [This corresponds with the observations of Virchow and the Berlin commission, who record that the mortality of the tenement-house population of Berlin increases from the first floor upwards, being greatest among those living on the top floor.]

"The basement hallway may be tolerable during the day, as the existence of a rear door opening to the yard permits, in many instances, the formation of frequent "through and through" currents. This defect the Tenement-house Law seeks to obviate by the insertion of a ventilator, of prescribed form, in the roofs over the hallways; and when this is properly made, and untampered with, material improvement results. The absence of light in hallways of this character, is a marked feature, and unsanitary, in that it fosters neglect and uncleanliness. But for the most striking instances of non-ventilation we must pass into the interior, and observe the construction of the bed-rooms. The interior dark bedrooms are entirely devoid of ventilation. It is absolutely impossible that a current of fresh air can pass through them, after they have been finished. The only means of air supply being a door opening into the dwelling room; this latter being used as a working, dining and sitting room. The exterior dark bed-rooms are generally somewhat better, having a window (sometimes absent,) opening into the hallway, and thus rendering a cross current possible. When we consider that these bed-rooms rarely exceed 640 cubic feet in dimensions, and that they are generally occupied by at least two persons, their evil effects are plainly evident. Here the law prescribes the window opening into hallway, and transom window over door, and when not contiguous to hallway, a window opening into adjoining room communicating with hallway. So far as opening into an adjoining room, (by window,) this remedy is inapplicable, as such a measure would be a violation of privacy, and at best but indirect and insufficient.

Attempts are frequently made to locate water closets in the hallways or cellars of tenement houses. These are universally found to be failures, as not only are they liable to the ordinary accident inseparable from these constructions, but they soon become, and continue to be, more or less, constantly disgusting evidences of neglect and abuse. Yard privies are often found full and offensive, with scanty and irregular water supply, contracted outlets, sewer pipes obstructed with rubbish, and closets filthy and dilapidated. Slop sinks are located either in the dividing rooms or hallways. Sometimes they are absent, and in that case the hydrant basin in the yard is resorted to. Frequently the drain pipes of these sinks are found to be untrapped, the result being the emission into the interior of the house, of offensive and dangerous gases. When efficiently trapped and well kept the location of the sinks seems immaterial, but perhaps a preference should be given to the hallways, as then, in case of accident or neglect, less harm could be apt to arise from any offensive emanations. Tenement houses situated on unsewered streets, are drained by cesspool, by discharging into the street gutter, and sometimes by connection with the privy vaults. But some houses are destitute of any means of drainage, and here the occupants throw their slops into the street, or on some convenient vacant lot. These houses demand close attention from the sanitary authorities. Although the matter of fire escapes has passed un-

der the control of the Department of Fire and Buildings, in accordance to the mandate of the new charter, this Board has, as occasion required, directed the construction of inside scuttle ladders, as a means of exit to the roof in case of fire. Isolated houses should of course have independent escapes, the best probably being the outside ladder and platform; but in adjoining houses, it may suffice to attach a small balcony on the front and rear walls of each stoop, so arranged as to permit a passage from the window of one house into the adjacent window of the next."

It is evident that the evils to which our tenement house population is exposed, are such as to call for a thorough and constant sanitary supervision. From the mere aggregation of numbers, and the difficulty of isolation, a rich field for contagion and infection is prevented, and the invasion of epidemic diseases is invited by the debilitating influences of non-ventilation and uncleanliness. The importance and benefit of a constant and thorough sanitary inspection of our tenement houses cannot be overestimated. By it the rapacious and indifferent landlord, whose sole anxiety is as to his rent-roll, is taught the full measure of his responsibility, and the tenant, driven thither perhaps by poverty, or ignorantly suffering from an accumulation of remediable evils, is awakened to the necessity of cleanliness and care, and persuaded or compelled to properly employ the improved means of ventilation and drainage, when provided.

Public Schools.—The Board directed, November 3, 1873, an inspection of all buildings used for school purposes, as to their conditions of ventilation, crowding and temperature. A sanitary survey was made of every public school in the city, and on the 2nd of March, 1874, the Sanitary Superintendent made a most valuable report embodying the results of this survey. The following resolutions were thereupon adopted: "Resolved, that a copy of the Sanitary Superintendent's report upon the condition of the public schools, be transmitted to the Board of Education with the following facts and recommendations; first, that the crowded condition of the primary department in many of the schools prevents, by reason of the confined position of the pupils and the poisoned condition of the atmosphere, the proper application to study and is alike most injurious to the health of teachers and scholars. It is believed that sanitary interests demand as the first, most important duty of the Board of Education, the construction of numerous, conveniently located buildings suitable for the purposes of primary instruction. Second, that the attention of the Board of Education is respectfully called to the fact that great injury is done to the health of pupils by the inequality of temperature that exists in many class-rooms, in many cases the temperature near the stove or register being forty degrees higher than in other portions of the room; to the necessity of making provision for the outer clothing of the pupils, which being hung in the rooms or placed beneath the desks during school-hours becomes a positive source of ill-health, to the need of a greater degree of cleanliness in many of the water-closets, and the construction and frequent use of the means of flushing; that all school-rooms in which light is so deficient as to make gas a necessity during school-hours, and all rooms that have no communication with the outer air, as in some of the rooms of the primary department of "Number 19," are unfit for school purposes and should be closed at once. Third, attention is especially invited to the primary department of "Number 18," in which one room was found, twenty by twenty-five feet in size with a ceiling six feet high, and no resting-place for the feet of the teachers and the seventy-five pupils occupying the seats, but large flag-stones which

constitute the only floor for the room,—on account of the low ceiling, its deficient light and the absence of all means of ventilation, it is recommended that the rooms be closed. Fourth, inasmuch as the schools are as shown by the accompanying report, the means of propagating contagious disease, the Board of Education is respectfully requested to furnish this board with a list of all unvaccinated children who apply for admission to the schools, and a list of all pupils who are detained from school by reason of any contagious disease,—such information being of great value in guiding this Board in instituting the needed precautionary measures."

Cow Stables.—Although the production of milk within the city limits implies a solecism, and continues in the face of a considerable popular disfavor, the domestic milk business is still carried on to some extent, but not so extensively or offensively as in former years. The Board early caused a systematic inspection to be made of the cow stables, and on the 19th of May, 1874, caused the following notice to be served on the owners and managers of such stables:

"The Board of Health of the city of Brooklyn hereby give notice that all persons keeping without a permit from said Board, more than one cow on a city lot, are liable to the penalty for violation of the Sanitary Code, and that said Board will prosecute all such persons, who do not procure permits before the 15th of June next. And the Board of Health give further notice that all applications for permits must give the owner's name, location, number of lots, size of stable, drainage, number of cows, how fed, &c. The Board will not give permits to keep milch cows to be fed in whole or in part on distillery and brewery grains, or swill, or for cow stables in the built up portions of the city, and in which the cows are constantly confined, or driven to pasture through populous streets."

The policy herein declared was subsequently modified in respect of the food interdicted; the use of fresh brewery grains not being considered to warrant the denial of permits to those who refrained from the use of swill. At the present there are 166 cow-stables in the city, the major part of them are small, having less than ten cows; there are only twelve stables having more than twenty cows. While the business is without doubt, still very lucrative, its gains are by no means so large as they were before public opinion was excited upon the question of swill-milk. Inspector Hall's inspections and report reveal the highly insanitary character of the city's cow-stables. He says, "the stables in a very large majority of cases are at best but shanties poorly built, and still more poorly kept. Owing to the fact that the cows are almost invariably kept therein except in some cases during warm weather, when they are turned out to pasture for two or three hours, the manure and urine are continually dropping upon the floor and oozing from the openings and the crevices of such floors, upon the ground, which finally becomes saturated with filth. Some of these stables have sewer connections, it is true, yet to a very large extent are not sufficient for thorough sanitary purposes, from the fact that the receiving basin becomes clogged and obstructed and perchance remains so the entire day or night, and in some cases even longer. The method of disposing of the manure forms another objection, the stable being in many instances removed at a distance from an agricultural district, it becomes necessary to store the manure for a length of time before removal. The manure box or vault becomes the receptacle for all the house offal which is to rot and fester until the farmer comes, which he does at his own convenience.

"Insufficient stable accommodation presents another evil. Very few of the stables now in use afford more than 150 cubic feet per cow, or in other words, each cow has a stall about 7 feet long, 3½ feet wide, and about 7

feet high, where, as a rule, it has to live about one year; sometimes, if a very good milker, a short time longer, with the exception of two or three hours exercise daily, during warm weather, out of doors. Even this in some cases is denied. Frequently, when the animal is turned out of doors it is too feeble to move more than a few yards from the building. The feeding of swill is continued by some cowkeepers. It is fed both hot and cold, fresh and stale; and frequently as it is swallowed by the cow, a copious discharge immediately follows from the bowels, a peculiarity, I am told, belonging to diseased or "consumptive" cows, as called by some dealers. This was observed at the Blissville stable, and it is believed that this affection is produced by swill feeding."

Milk from the swill stables must, to a very great extent, go to a class that are yearly increasing our mortality list, namely, infants. Physicians meet with cases in their practice, where milk from one dealer would cause vomiting and diarrhœa, and when changed for that of a reliable dealer, these symptoms would disappear, only to reappear by a second exhibition of the swill milk.

Slaughter-houses.—The scattered slaughter-houses of the city early engaged the attention of the Board. Acting on the principle now generally conceded by all authorities, that the business of slaughtering is incompatible with the welfare of built-up communities, the first step taken was (April 6th, 1874,) in the direction of concentrating the business at two points on Johnson and Hudson Avenues. At these localities the slaughter-houses were allowed to remain under temporary permits. Others were to cease operations after July 1st, 1874. Subsequently, after the reorganization of the Board, the question was again carefully discussed, and fresh conferences held with those interested in the continuance of the policy then in force; and December 10th, 1874, an additional section, already quoted as an amendment to the sanitary code, was adopted, placing the date for the removal of the business of slaughtering to abattoirs, located on the water-front, at January 1, 1876. The effect of the new regulations, when carried into operation, will be to place this city on an equal footing with the principal larger cities of the civilized world. Some loss must come upon those whose investments have been made in the built-up sections, but this will be more than counterbalanced by a direct and positive gain to the public welfare. At the abattoirs slaughtering can be carried on without nuisance; the animals can be inspected before they are slain; the disadvantages and cruelty of driving through our streets will be diminished; the plentiful supply of water facilities; greater neatness; the treatment of fat, offal, etc., by rendering and other processes now in use in other cities, can be conducted without offence, on the spot, while the materials are fresh and untainted; and the rejection of unwholesome food will be accomplished with a greater degree of certainty, than is possible by the present plan.

The Sanitary Police.—The police force assigned, by the Department of Police and Excise, to sanitary duty has averaged nine men under the command of a sergeant. Their services have not been exclusively given to this work, but have also been employed in various ways on duty at their own headquarters. During the greater part of the time covered by this report one officer has been in charge of the disinfecting wagon, one has acted as inspector of slaughter-houses and markets, and two officers as inspectors of the water front, and two others have served at the offal-dock.

The amount of time occupied by them in sanitary work and the service of papers has been very considerable, and their labors have been exceedingly important and useful. The report of the officer in command shows the number of inspections made by them to have been 16,824, and 14,298 services of orders and other papers issued by this Board. Of their written complaints 6,802 have been made the basis of orders and notices for the abatement of nuisances.

Ambulance Service.—The Common Council having been petitioned by numerous citizens to cause the establishment of an ambulance system, obtained from the legislature, May 24, 1872, a fund of five thousand dollars for that purpose, and on May 12, 1873, they requested the Board of Health to report "the most useful appropriations of the moneys applicable for the supply of ambulances and appliances for the more prompt relief of wounded persons." This Board thereupon reported in favor of the purchase of two ambulances, one to be located near the Long Island College Hospital for the Western District of the city, and another near the Eastern District Hospital. The Common Council then, July 14, 1873, authorized this Board in conjunction with the Board of City Works, to organize an ambulance service from the fund set apart for that purpose. The necessary arrangements were soon made to procure and equip two ambulances; to connect the two stations, located as above recommended, by telegraph with the central office of the police department, and to appoint surgeons to be ready at all hours to respond to calls for the relief of the wounded and persons taken suddenly sick in our streets and public places. From August 20, 1873, when the first ambulance reported ready for service to January 1, 1875, the number of calls answered has amounted to 770, of which 551 were made by ambulance number one, in the Western District, and 219 by number two, in the Eastern District; the total number of cases removed to hospitals or to their homes was 687. As a rule the calls have been attended to with the utmost promptness and celerity. The demands of the service are so constant and growing that a third ambulance should very soon be provided to replace the others when they require to be repaired and to meet emergencies. The accompanying summary is not complete for the earlier months. The following surgeons have served in the order in which they are named: to ambulance "number one," Surgeons G. W. Cushing and E. B. Jones; to "number two," Surgeons H. C. McLean, T. W. Nadal, F. C. Talcott and O. J. D. Hughes.

SUMMARY OF THE AMBULANCE SERVICE, FROM THE DATE OF ORGANI- TO JANUARY 1, 1875.

Ambulance No. 1.	No. of Calls.	No. of Removals.
1873.		
August 20th to Oct 1st,...	40	40
October.....	35	34
November,.....	41	41
December,.....	17	17
1874.		
January,.....	24	24
February,.....	24	22
March,.....	28	27
April,.....	18	18
May,.....	53	51
June.....	50	50
July,.....	60	56
August,.....	39	32
September,.....	31	24
October,.....	33	26
November,.....	31	25
December,.....	27	18
	551	505

Ambulance No. 2,	No. of Calls.	No. of Removals.
1873.		
October,.....	7	7
November.....	8	4
December,.....	11	4
1874.		
January,.....	7	7
February,.....	10	10
March,.....	15	13
April,.....	5	7
May,.....	13	11
June,.....	18	17
July,.....	28	19
August,.....	11	11
September,.....	20	16
October,.....	21	18
November,.....	26	20
December,.....	19	18
	219	182

Total No. of Calls for Ambulances No. 1 and 2,..... 770
" " Removals " " " " 687

Respectfully submitted,

JO. C. HUTCHISON, M. D.

Commissioner of Health and Chairman of Committee On Report of the Board of Health.

The foregoing report, prepared by the committee, and adopted by the Board of Health, is respectfully submitted.

J. T. CONKLING, M.D.,

President.

E. L. LANGFORD,

Secretary.

ANNUAL REPORT OF THE ATTORNEY.

To the Board of Health of the City of Brooklyn:

Gentlemen:—The following is a statement of the number of actions commenced, discontinued, judgments entered, and the amount of costs collected from September, 1873, down to and including December 31, 1874:

The total number of actions commenced by order of the Board during the said period is twelve hundred and eighty-eight (1288).

The total number of judgments entered in favor of the Board in such actions during the said period is four hundred and fifty-four (454).

The total number of actions in which payment has been made on account of judgment and costs during the said period is three hundred and seventy-eight (378).

The total amount of payments made to counsel on account of judgments and costs during the said period is seventeen hundred and ninety-six dollars and seventy-five cents ($1,796.75).

The total amount of payments made by counsel to the Board on account of amount collected by him for judgments and costs during the said period is seventeen hundred and ninety-six dollars and seventy-five cents ($1,796.75).

The total number of actions discontinued (with and without costs) for all causes during the said period is six hundred and forty-six (646).

The number of actions in which judgments were entered in favor of defendants and against the Board is two (2).

The number of actions pending on December 31, 1874, is one hundred and eighty-six (186).

The following tabular statement shows the number of actions commenced and discontinued during each month:

	1873.		1874.												
	Sept. & Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Total.
Actions commenced by order of the Board.	520	168	89	46	70	10	38	38	78	63	28	40	47	52	1288
Actions discontinued.	146	89	17	40	93	106	14	8	18	35	22	20	16	22	646
Amount of payments made on account of penalty and costs.	$337.00	$278.25	$35.00	$138.00	$218.50	$307.50	$38.50	$28.00	$65.00	$73.00	$130.50	$59.50	$40.50	$48.00	$1796.75
Amount of payments made to the Board by counsel.	$337.00	$278.25	$35.00	$138.00	$218.50	$307.50	$38.00	$28.00	$65.00	$73.00	$130.50	$59.50	$40.50	$48.00	$1796.75
Number of actions in which payments have been made.	66	57	7	33	45	68	9	7	15	16	24	12	9	10	378
Judgments entered in favor of the Board.	48	33	18	16	44	102	27	12	29	28	31	31	11	24	454
Judgments entered against the Board.	....	....	....	....	....	....	....	....	..	...	2	...	....	....	2

From the foregoing it will be noticed that the average collections for costs and penalties made in the actions amounts in each case to only one dollar and thirty-nine cents. This result is due to the policy early recommended by your Honorable Board, viz.: that of endeavoring to enforce by legal proceedings a compliance with its orders in a manner calculated to inflict the least possible expense on the citizen.

This report is confined exclusively to suits commenced in the name of the Board and does not include any account of the warrants which have been issued by Justices of the Peace or Police Magistrates on complaints of Inspectors and others for the arrest of parties violating the provisions of the Sanitary Code and orders of the Board. Such arrests being in the nature of criminal proceedings do not come within the official duties of the Attorney to the Board, nor form a part of his record as such. Persons arrested on a warrant, if found guilty, may be fined not exceeding twenty-five dollars, which must be paid to the magistrate, and all fines and penalties recovered in proceedings commenced by warrant the law directs shall be paid directly to the Treasurer of the City. Thus your Honorable Board is prevented from receiving or exercising any control over the fines collected by magistrates from persons proceeded against by warrant, nor has it any official knowledge of what fines are imposed or collected by them.

Dated Dec. 31, 1874.

Respectfully submitted,

JOHN C. PERRY,

Attorney to the Board of Health.

STATEMENT OF FINANCE COMMITTEE.

Amount of appropriations for the Department of Health from May 8th, 1873, to January 1st, 1875,			$100,281.91
Amount paid for Salaries from May 8th, 1873, to January 1st, 1875,	$70,850.63		
" " Stationery, &c., from May 8th, 1873, to January 1st, 1875,	6,281.54		
" " Contingencies, " " " " "	4,064.13		
" " Disinfectants, " " " " "	229.22		
" " Vaccine, and Removals to Hospital, from May 8th, 1873, to January 1st, 1875,	1,097.05		
" " Expenses of Disinfecting Wagon, " " " " "	992.62		
" " Removal of Garbage, &c., from August 1st to December 31st, 1874,	12,920.01		
		96,435.21	
January 1st, 1875, balance,			$3,846.70

J. T. CONKLING, M.D.,

Chairman Finance Committee.

REPORT OF THE SANITARY COMMITTEE

ON THE

Principal Causes of the Excessive Mortality in Brooklyn.

PRESENTED JANUARY 8, 1874.

In compliance with the following resolution passed by the Board of Health, November 20, 1873: "*Resolved* that the Sanitary Committee be and are hereby reqnested to report to this Board the causes of the high death-rate in Brooklyn, and to suggest such reforms as may be deemed practicable," the Chairman of the Committee begs leave to report the following report: The great obstacle to the progress of the race, the most grievous tax on the productive energies of the most civilized communities is disease and premature death. Premature death is still the rule. Between 20 and 40 years of age, there died in the United States, in 1870, 140,411. In England, the Registrar-General's return show that one-half the deaths are due to preventable diseases, while the proportion in ill-regulated towns is two-thirds. Thus the sanitarian has to strive to prevent 50,000 deaths and 1,000,000 cases of sickness yearly in England alone. Some success has been attained in this direction. The average longevity among civilized peoples is constantly on the increase.

The "expectation of life," as the actuary of life insurance tells us, is now rather more than 40 years, while at the beginning of this century it was quoted at about 30. In other words, the improved conditions of society have added 10 years to the life period of every individual. In Liverpool, in the year 1846, the death-rate was 38, that is 28 persons died out each 1,000 living; in 1863 the rate was reduced to 24, just two-thirds, or a saving of 4,000 lives annually. Sanitary legislation and sanitary labor have wrought great changes in London. In the 17th century that city was the most unhealthy capital of Europe. Now it is one of the most healthful, and not more sickly than many rural districts of England. Then one in 40 died; now less than half that proportion die annually.

General and Ward-rates of Mortality.—Last year there were 12,648 deaths in the city; 31.16 in each 1,000 inhabitants, while the City of London, with a much larger proportion of poor and squalid inhabitants and a more limited supply of water, had an average death-rate of only 23.7. If our death-rate was as low as that of London, not more than 10,350 would have died—a saving of 2,298 lives. If the entire city of Brooklyn had been as healthy as the old Third Ward the records would have shown 8,550 deaths, or 4,088 less than the actual mortality. If the entire city had

been as unhealthy as the Sixteenth Ward we would have registered 26.550 deaths. In our different wards we see a mimimum death-rate in the Third Ward, nineteen, and in the Sixteenth Ward a maximum, fifty-nine, in the remaining wards intermediate rates, the average for all being 31. The population of the city is here computed at 400,000; the census of 1870 gives about that total; namely, 396,099.

The average of 10 years, 1861 to 1871, in London, was in the District of Hampstead, 15.2, minimum, and in St. George's East, 28.6, maximum, the average of districts 22. The important fact here to be noticed is this: In London the highest rate is not quite double the lowest. In Brooklyn it is three times greater. In other words, the best conditioned portion of London is a little better than our Third Ward, but its worst conditioned portion is not one-half so bad as our Sixteenth Ward.

In view of this great disparity between different cities and sections, and in view of the incontestable fact that the general health largely depends upon the wise administration of sanitary law, it becomes the duty of the administrators of that law to search out the special causes of mortality, and, having found them, to apply the remedy which the law allows. When the law fails to reach the case, they must appeal to the enlightened citizens for their support in a more thorough reform, and even seek to create a popular interest which will second sanitary measures and compel such legislation and execution as shall redeem unwholesome districts, and protect the entire community from the approach of pestilence and the ravages of every other form of preventable disease. How much better is the wisdom which prevents pestilence than the self-sacrificing courage which hastens to contend against it. Says the Memphis *Appeal*, speaking of the late epidemic of yellow fever: "It has so indelibly left the impress of its fearful visitation upon our peoples that a ceaseless demand, until satisfied, will be made of our city authorities, that the causes, real or imagined, which either brought the epidemic here, or aided in its propagation after it came here, shall be removed, root and branch. No matter what the cost, the people and press of Memphis will not be satisfied with less than a radical change in the management of the hygiene and policeing of the city." A city that has once been smitten with pestilence is ready to admit the truth of Franklin's maxim: "Public health is public wealth;" and Memphis, if she learns her lesson aright, will not soon again be crippled by an epidemic wasteful alike to life and commerce. So Brooklyn must not be satisfied until the causes of the great mortality of some of its wards have been sought and found, and all proper means employed for their speedy removal.

Defective Drainage.—The great sanitary fault of Brooklyn arising from its location is its defective drainage, and its great need is a comprehensive system of sub-soil drainage. Sewerage has measurably been provided. The distinction between drainage and sewerage is that the former provides means for keeping the lower portions of the soil from becoming saturated, while the latter only provides for the proper disposal of surface and waste water from houses and streets. The comfort of the citizen and the economic considerations of civic life demand in every thickly settled community a water supply and a system of sewers. Health considerations, however, are seldom consulted; more frequently they are directly contravened. Proof of this is not wanting in most American cities; in our own Fifteenth Ward we find a striking and frightful example, where the mouths of sewers empty their polluted streams upon low lands that are destined ere long to be built upon; while in the Sixteenth Ward there is

a back-flow of sewage with every rain, flooding the cellars and filling the houses with sewer-gases.

A glance at a topographical map of the city reveals the fact that the surface of its territory is very irregular. It has numerous low hills, interspersed with "swales," or low lands, and is seamed at three points with natural water courses, the borders of which are low and marshy. This conformation has many disadvantages as a site for a city. For as its streets have extended, they have crossed, intersected, and dammed up the natural water courses, the water backs up and becomes ponded. In the low lands, the already super-saturated soil is converted by the intersecting streets and avenues into a sort of checker-board of stagnant pools, destined to receive a plentiful supply of water by rain-fall. In order to make these undrained, sunken lots available for building purposes, they must be filled in. But it should be remembered that filling in with earth does not make such lots dry and healthful. No more damaging expedient could be desired. The water is not removed, it is merely covered up; the filling becomes saturated; the soil becomes soured and chilled by the moisture brought to the surface by capillary attraction and evaporation in the form of mist, and cellars are made wet with soil water. As a consequence of this unsanitary practice, we have malarial fever, typhoid fever, tuberculosis, and other common and fatal maladies, or a depressed condition of the system, which makes one liable to the development of any form of disease, occurring in houses built over these neglected water courses. Says Gen. E. S. Viele, in a report on Sanitary Engineering, made to the New York Health Board in 1870, page 415: "A volume might be filled in the citation of cases which have occurred, and are occurring, in dwellings and among families in the lower part of the city, where these obstructed water-courses mark the inevitable line of life and death. In a large hotel located over one of these courses, repeated cases have occurred of typhoid fever, followed by death. A number of the most costly dwellings in certain portions of this city have been abandoned by the owners as a residence after the death of members of the family from this cause."

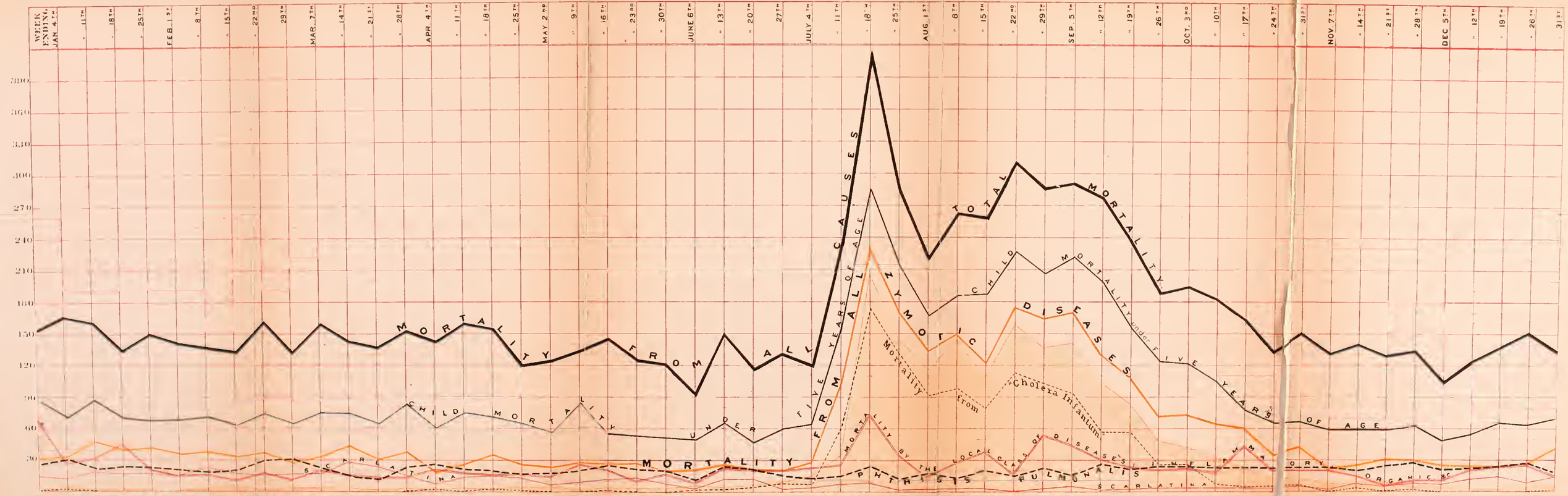
The marked effect of subsoil drainage in diminishing the mortality from phthsis, is thus stated by Dr. George Wilson in his hand-book on Hygiene, 2d ed., p. 269. Referring to the 9th and 10th reports of the Privy Council, 1866, by Dr. Buchanan, he says, "It was found that wherever the drying up of the subsoil had been effected either by the construction of drain-sewers, or by special drains or deep storm-culverts, where the pipe system was carried out, the mortality from phthisis has decreased from 50 per cent. downwards. In Salisbury, for example, the death-rate from phthisis has fallen 49 per cent., in Ely, 47; in Rugby, 43; in Banbury, 41, and in twelve other towns the rate of diminution, though not so marked, was nevertheless noteworthy. On the other hand, it also became apparent that in other towns, such as Alnwick, Stafford, Morpeth and Ashley, where no drying of the subsoil had been effected, there was no reduction in the the phthisis death-rate, even although the greatest possible progress had had been achieved in the removal of filth. This was owing to the fact (and the same condition exists in Brooklyn) that in these towns impervious pipe sewers had been laid down, without making any provision for deep subsoil draining, the storm water being carried off in superficial culverts. Similar observations had been made by Dr. Bowditch, of Boston. Professor Pettenkofer attributes the difference in the mortality of the great cities of London and Paris, each 22 in the 1,000 and his native city, Munich, 33 in 1,000 to the defective drainage of the latter city, and the Committee

on Hygiene of the Kings County Medical Society estimates that 50 per cent. of the deaths from zymotic diseases in the County of Kings is due to the want of proper drainage. Your Committee take pleasure in stating that the Consulting Engineer of the Board, Colonel J. W. Adams, is now engaged in preparing a report on the nature and necessity of a system of drainage for sanitary purposes in the city of Brooklyn, which, they trust, will awaken public interest on this important subject.

Improper Filling of Lots.—In Brooklyn the catastrophe to the general health is augmented by the character of the material used for filling. Anything that will sink in water or absorb it, has value for filling in lots. Street refuse, house garbage, the waste of factories, and a variety of putrescible substances are here deposited. Ostensibly to serve as a foundation for houses, but in reality to become fetid cesspools and fever-nests for these who should dwell therein. That this is an important agent in producing the large death-rate of Brooklyn there can be no doubt. The danger from this practice is owing to decomposition of the organic matter so deposited giving rise to poisonous emanations, which permeate houses built on such ground for years afterwards. Row after row of houses in this city are built on just such foundations. The unfortunate occupants attesting by their blanched faces, attacks of diphtheria, spotted fever, typhoid fever, and other preventable diseases, the dire effect of the insidious poison generated by the rotting of the filthy matter in which their cellars are dug, and over which their living and sleeping rooms are situated. It is no exaggeration to say that this unwise and culpable policy and practice has annually cost the city of Brooklyn hundreds of lives. It has been shown by reliable authorities that those sections of the city of Liverpool which have been filled with material containing garbage have a much higher death-rate than those filled with earth or clean ashes alone. This great sin against the public health has gone unchecked, and almost unnoticed until a comparatively late date, and you have witnessed the difficulty which attends the correction of this abuse. But with an increase of sanitary knowledge sooner or later the abuse must terminate, and then, and even before, must be attempted a remedy for the evil already done.

The remedy will be drainage, by which the moisture of these fever-beds will be taken up and carried away. For this legislation will be necessary. A drainage law such as now stands upon the statutes among the laws of 1871, but which applies solely to the City and County of New York, should be demanded, in which the Board shall have co-ordinate powers. The further duty for the present is the continuance of the policy which forbids and punishes the deposition of garbage and decomposing substances on sunken lots. For the future it is advisable to correct defective drainage by urging upon those who plan our system of sewerage the expediency of carrying out therewith a system of drainage. The ponding of water by the obstruction of natural drainage streams can be largely remedied at the time of street construction by leaving the lowest channels of those water-courses open to the rivers or bays. The powers to compel so much of regard to the future health of the city should rest with this Board. At all events, if not now, in the future, it must have power to enjoin and correct such ill-advised action as would obliterate an artificial drain. In the Twenty-first ward of this city, the street contractor was allowed to so dump the earth used in the construction of a street as to close the mouth of a drain built at public expense for the relief of a considerable district.

THE COURSE OF THE TOTAL MORTALITY AND THE CHIEF FATAL DISEASES IN BROOKLYN IN THE 12 MONTHS ENDING DECEMBER 31ST 1868.



PREPARED UNDER THE DIRECTION OF THE REGISTRAR OF VITAL STATISTICS FROM OUTLINES FURNISHED BY DR R C STILES DEPY REGISTRAR
By E.J. Randall del

The linked area shows deaths by Diarrhoeal Diseases

For the following considerations on the relations of the soil to health we are indebted to Elias Lewis, Jr., Esq., of this city:

"Upon the composition and structure of soils depend not only their economic value, but their relations to health and disease. All clayey soils retain moisture, and render drainage imperfect. The stagnant water becomes laden with particles of organic matters in decay, and a source of those conditions which render the air impure and unhealthy. Some of these conditions we will briefly notice.

"Many fatal diseases, as malignant fevers, cholera, diphtheria, and probably consumption, originate, as is now believed, from breathing air made unhealthy by decomposition of dead matters, and by the organisms or germs which moist foul air seems to develop.

"The process of organic decay, or oxidation, is nature's means of getting rid of effete and offensive matters. But over saturated soils—where organic decay is rapid—and especially in close confined places, as yards or cellars, where the air has insufficient sweep, it becomes depleted of its oxygen, and charged with excess of carbonic acid. It is found in many such places that instead of 21 per cent. of vital air, there may be only from 17 to 19 per cent. of it, and 2 or more of carbonic acid, when there should be only 1 part to 2,500 parts of atmosphere. So that in places such as named, people breathe day and night the foul and devitalised air.

"Again, from decomposing matters there passes in the atmosphere innumerable particles of matter which enter the lungs and the blood, and there originate changes which are known to be closely related to health. But the most fruitful source of disease from the presence of saturated grounds, charged with matters in a state of decay, is probably the development of organic germs, living forms of extreme minuteness which arise in the air, probably in or with the particles of vapor, and like particles of dead matter enter the blood through the lungs. Observation and theory alike confirm the startling fact that the diseases mentioned and many others originate from this cause.

"That such germs infest the air over damp ill-drained districts is well known. Every hot day in summer produces, if it does not ripen a crop of them, and sickly frames, inert and sallow-faced children indicate in settled districts clearly enough where the malarial harvest is most abundant.

"But there are other means by which the presence of malaria may be detected. At the close of a hot summer day fill a clean glass dish with ice water, go into the suspected place, and soon the condensed moisture will drip from the bottom of the dish. This, if collected in a vial, and exposed to warmth and sunshine, will soon become turbid, finally slimy, and then the microscope may reveal in it an innumerable host of organisms. These have multiplied, so that the clear dew is thick from their presence. Now, if dew be condensed at the same time over a dry, well-drained or elevated spot, it remains clear and pure.

"We are informed by physicians that malarial fevers and other similar diseases do not originate in dry, airy districts. But where soil is imperviable to water which stagnates in it, or upon it, from organic decay; where the subsoil is saturated to near the surface, as from the presence of clay-beds in it; and cellars are damp, and their walls slimy from fungoid growths; and sewerage defective, the death-rate is sure to be high, and we have sickly children, enfeebled manhood and womanhood, low mental and moral development.

"In this city, enormous mud beds, old marshes, filled with organic matter,

are being buried by a few feet of earth, and in a few years over these "made" lots there will be built houses, with cellars sunk to near the saturated strata of mud. And it is probable these will be houses of the poor. We certainly do not *design* to add sickness and enfeeblement to poverty, and pile terrible burthens upon those who are already heavy laden.

"The time is no longer in the future when soil conditions in respect to health can be overlooked. In cities it is imperative that the under drainage be good. If the soil be loose and porous, artificial means are not needed, but if layers of clay or impervious loam occur, or if the surface be near the water level, artificial means of drainage are indispensable. I am informed that there are portions of this city where every high tide causes the saturated ground to overflow into cellars, and that in some instances where cellars are in made ground over old marsh beds, the water enters discolored by decaying matters which it holds in solution. It is not wonderful that chills, fevers, and diphtheria, prevail in those places; it would be wonderful if they did not."

3. *Unclean Streets.*—A further cause of the large death-rate in Brooklyn is the unclean condition of the streets. There can be doubt that in this respect Brooklyn ranks with the most filthy cities in the civilized world. The neglect of street cleaning is the subject of constant report and complaint by our inspectors. Street dirt is composed largely of decomposable organic matter, chiefly the excrement of horses. This, when saturated by rains and watering carts, is decomposed and fills the air with foul and dangerous emanations. Street cleaning in the City of Brooklyn, except in the principal thoroughfares, is a mere sham. This evil is due, in a measure, to the imperfections of our contract system. The contracts are often taken at a price which makes it impossible for the bidder to fulfil his contract without pecuniary loss, and this Board has good reasons for believing that contractors are not expected to comply with the terms of the contract and specifications. The neglect to enforce rigidly the terms of the contract for street cleaning has prevailed from time immemorial.

The custom has been handed down to the present authorities through a long line of predecessors. Let us hope that our Board of City Works is now alive to the sanitary necessity for clean streets, and that they will in the future cease to permit the wilful violation of contracts, and compel compliance by enforcing the penalties for negligence, and by prosecuting securities of contractors. In this way only can the evil be remedied. The contracts do not provide for the stated cleaning of other than improved streets, which must be cleaned three times in each week, while other streets are cleaned as often as the Board of City Works may direct. The interests of the public health demand that every street be thoroughly cleaned at least three times in each week, and the great thoroughfares every night.

Clean streets are especially important in the poorer sections of the city where filth must abound, and where the inhabitants who are most ignorant of the danger to health arising from the neglect of sanitary laws, should have an example of cleanliness placed before them by those in authority. This in the opinion of your Committee can never be accomplished under the present contract system. In the City of New York, by Chapter 677 laws of 1872, and by Chap. 335, laws of 1873, the Board of Police has full and exclusive power and authority and is charged with the duty of causing all streets, avenues, lanes, alleys, gutters, wharfs, piers and heads of slips to be thoroughly cleaned from time to time, and to be kept at all

times thoroughly clean, although the Board of Health is relieved of all direct responsibility in respect to the cleanliness of the streets, it is evident from a provision of Sec. 6, of the last named act, that the Legislature intended it should have a constant supervision of a subject of such vital importance to the public health. In the performance of this duty this Board have required the Sanitary Inspectors in charge of the several districts into which this city is divided to inspect the streets of their respective districts, and to report weekly to the Sanitary Superintendent as to their sanitary condition. The Board of Health reports that during the past Summer the streets in the City of New York have been in a uniformly more cleanly condition than at any period during the past ten years. If the same agencies could be empowered to clean the streets in the City of Brooklyn, your Committee believe that public health as well as public cleanliness would be greatly promoted.

4. *Old Fashioned Yard-vaults.*—Another permanent source of disease and death in the City of Brooklyn is the privy nuisance. There are in this city three ways in which human excreta are disposed of: First, by water-closets; second, by vaults connected with the sewer; third, by vaults not connected with the sewer. These unconnected vaults, consisting simply of an excavation in the ground, varying in depth from three or four to ten or more feet, walled on the sides like a well, with loose stones. By the first two methods the excreta are conveyed immediately into the sewer by water. By the third method the solid contents are retained in these vaults, and a foul and decomposing mass accumulates, which is removed only as it is carried away by the scavengers. In extensive districts of the city, originally low and marshy, and in other sections where there is no surface drainage, these vaults or wells receive, to a varying depth, the surface and soil water, depending on the supply of rain water, and as the rain falls and soaks into the vaults, it dissolves all the soluble and noxious parts of the excreta, and this dangerous solution not only emits the stench of decomposition, but is alive with any disease germs conveyed to it in the evacuations of persons sick of dysentery, typhoid fever, cholera or other diseases of this type. During dry weather, the foul solution soaks into the adjacent ground for a distance of several hundred feet, as proved by the demonstration of disease conveyed to the wells of drinking water; so that each unsewered vault is the centre of a circle of ground defilement and infection. In an unsewered neighborhood, or a locality where sewer connection is not enforced by sanitary authority, and where this subterranean afflux and reflux, and rise and fall of the soil water is going on, as it is in all the made lands of the city, especially in the Twelfth, Sixteenth and other wards, the entire ground is saturated with the contents of the vaults, and its emanations and affluvia permeate the soil, pervade cellars, and exhale into the atmosphere. This is the underground circulation, the soil water flowing into these foul vaults and out again into the soil. It is an interesting fact that the distinguished physician, Pettenkofer, finds cholera flows in the soil water which thus circulates, leading to the spread of cholera. For want of sewer connections the accumulation in these receptacles must be removed from time to time. This work is never done in the day. It makes the night, to the house and neighborhood, a reproach to decency. The methods of removal are disgusting in the extreme, and the men employed are, by their work, rendered disgusting likewise. This city provides but one dock, situated at the foot of Washington avenue, to receive all the night-soil of Brook-

lyn, and thither, along all our streets, from the most remote parts of the city, during the heat of summer, a hundred noisome loads were drawn every night. The work itself, the process, the men engaged upon it, the official provision for its reception and removal, and every incident connected with it, is degrading, detrimental to health, and an unmitigated nuisance.

It is estimated that there are in Brooklyn 67,000 houses, of these 40,000 are connected with the sewer either by water-closets or by connected vaults with pipes leading to the sewer, so that 37,000 houses are estimated to have no sewer connection. These all have the excavations in the ground for the accumulation of excreta, and a very large number of the houses with water-closets in the house also have vaults in the yard for the use of servants. This shows the enormous extent of the privy nuisance in this city. More than 40,000 underground vaults and large masses of decomposing excrement! On these the city stands. These must be opened and emptied at least once a year. The soil and the atmosphere will never be free from fœcal pollution while this state of things continues. In a report made to the Board soon after its organization (June 3, 1873,) the undersigned expressed the opinion that privies and water-closets unconnected with sewers were among the most serious of the unhealthful influences of the City of Brooklyn. Further observation and reflection have confirmed the views thus expressed. For the purpose of arresting this evil, the following addition to the Sanitary Code, and the accompanying resolution is respectfully submitted to the Board for adoption:

Resolved, That the Sanitary Superintendent report to this Board all premises unconnected with sewer, in order that orders of the Board may be made for sewer connection of privies, cesspools, &c., in every case where sewers are provided.

Sec. 77. That all privy vaults or sinks hereafter made or rebuilt in the City of Brooklyn, shall be water tight, and when on lots adjacent to sewers shall be connected with the same, in accordance with the regulations of this Board and of the Department in charge of Sewers.

Your Committee have called attention to some of the more conspicuous sources of disease and death in this city, for the purpose of demonstrating that their removal is to a large extent practicable, and to indirectly enlist the sympathy and co-operation of all humane and intelligent citizens in the efforts of this Board to check the growing evils of the community. Shall this needless mortality and invalidism be allowed to exist a day longer than shall be necessary to put in motion the Sanitary forces, which are competent here, as well as elsewhere, to combat them. These Sanitary questions concern every citizen, whether he has a mansion for a home, or lodges in a crowded tenement, for no one can elude the influence of the unsanitary agencies which are potent in the city wherein he dwells. Just as in olden times the jail-fever was a scourge to punish judge, jury and aristocratic looker-on in the courts of justice for the unsanitary condition of the Bridewell, so now the neglected sources of contagion are constantly preparing revenges against those whose security leads to ignore the situation of those less-favored than themselves. The social, moral and physical welfare of the community demand these reforms, for there is an intimate relation existing between the sanitary and moral conditions of a people. They will require an expenditure of money, but, even financially, they will in the end prove a good investment, and a proper economy demands them. It is equally true that "public health is public wealth," as

that destructive epidemics are expensive and demoralizing. There are no good reasons why this city may not be made one of the cleanest and most healthful cities on the continent, and become attractive alike to permanent residents and to transient visitors; thereon hinges much of her future prosperity. Brooklyn is often spoken of as the "City of Homes," as well as the "City of Churches;" these homes must be made healthful, or our good name is destroyed. Moreover, Brooklyn may be made an object of pardonable pride with every citizen in furnishing an example of thorough sanitary work and an increased public health which other American citizens may study and emulate.

J. C. HUTCHISON,

Chairman Sanitary Committee.

REPORT OF THE SANITARY COMMITTEE

ON THE

Manufacture and Adulteration of Candies and Liquors.

PRESENTED AUGUST 6, 1874.

The following was adopted by the Board at a meeting held July 30, 1874:

Whereas, frequent complaints have been made by the press and the people that *terra alba* (which is nothing but plaster of paris or gypsum), glucose, lamp black, glue, tonka beans, tartaric acid, sulphuric acid, aniline, verdigris, Brunswick green, gamboge, smalt, ultramarine, oil of turpentine, Prussic acid, rotten cheese, fusel oil, chrome yellow and other drugs and compounds are largely used in the manufacture of cheap candies; and

Whereas, The indiscriminate use of such poisonous drugs and compounds is considered deleterous to health; therefore, be it

Resolved, That the Sanitary Committee, or such officers of the Board as they may direct, do thoroughly investigate and report to the Board as soon as possible, on the mode of, and material used in, the manufacture of all descriptions of wares and merchandise made or sold by confectioners, in order that children, at least, may be protected from the evil effects of the dangerous compounds which are sold under the designation of candy.

The intent of the foregoing resolutions appears to be expressed in the direction to investigate and report to the Board the mode of, and material used in, the manufacture of all descriptions of wares and merchandise made or sold by confectioners, in order that children, at least, may be protected from the evil effects, etc. Such protection as may be afforded by dissemination of information in regard to articles of food and drink has, at various times, been extended in important instances by sanitarians and Boards of Health. Elaborate inquiries, involving prolonged, systematic and complete chemical analysis have been made, including the entire list of articles of food and drink, and the results and conclusions published, forming a valuable store of information for the public and for health authorities. These inquiries, of course, have involved a heavy expense, and once made will be largely consulted by subsequent inquirers. Shorter and quite practical investigations in some special fields have been recently made in this country, and valuable reports are published in the Annual Report of the State Board of Health of Massachusetts, in 1873, and in the Annual Report of the Board of Health of New York for 1872. Brief extracts from the former, and the latter complete, are subjoined:

From the Massachusetts State Board of Health Report:—In the Spring

of the present year rumors of cases of illness occurring some months previously in a family in Boston, and caused, as it was supposed, by eating ice cream of a certain flavor, came to the ears of the writer of this report, and were communicated by him to the Secretary of the State Board of Health. This led to the suggestion that the character of the substances employed for flavoring articles of food and drink receive investigation.

About twenty or twenty-five years ago it was discovered that certain compound ethers possessed the odors and the flavors of many flowers and fruits, and a disposition was soon manifested to take advantage of this circumstance. Perishable and rare fruits could be cheaply imitated in flavor by substances unchangeable and always at hand.

The Artificial Fruit Essences.—Butyric Ether: This may be prepared by mixing butyric acid with sulphuric acid, (oil of vitriol,) and alcohol, and forms the pineapple essence. *Pelargonic Ether* may be prepared by digesting pelargonic acid with alcohol, and forms the quince essence. *Acetate of Amyl Ether* is prepared by distilling a mixture of fusel oil, acetate of potash and concentrated sulphuric acid. An alcoholic solution of the ether forms the Jargonelle pear essence. The action of sulphuric acids and valerianis acid upon fusel oil forms the apple essence. Other mixtures of the ethers result in imitations of other fruits, the strawberry, raspberry, apricot, currant, etc. Dr. Hassell, in his "Adulterations Detected," says, "Many articles of sugar confectionery are flavored with essences which are often of an injurious and even dangerous character, some of them containing prussic acid and fusel oil." "I have heard," says Professor A. S. Taylor, "that some of the Jargonelle pear drops and the ribstone pippin drops have produced drowsiness in children." As regards the use of these artificial fruit essences, it is an undoubted fact that they are very extensively employed everywhere for the flavoring of jellies, confectionery of various kinds and syrups for soda water. They are also used in the manufacture of factitious wines and other alcoholic liquors. This statement is sustained by evidence furnished by confectioners, druggists, grocers and manufacturers of wines and liquors and of soda water syrups. For example, a grocer formerly kept jellies from the pure fruit, but found it "didn't pay," and now keeps none at all. Those now kept are made from apples, properly colored, and flavored with the artificial fruit essences bought in New York. The jellies cannot be distinguished by customers from those made from pure fruit. They retail at from twenty to thirty cents per eight-ounce tumbler, according to the locality of the retailer, who keeps currant, raspberry, strawberry, blackberry, peach, quince, crabapple, pineapple and grape, all made from the same material.

A confectioner, the extensive manufacturer of popular candies, sold principally in the street and in places of public resort, railroad stations, &c., has the artificial essence exclusively for fruit flavors.

The business of the brewers' druggists may here be alluded to. This class of persons made its appearance years ago in Europe, and flourished especially in England. Hassell says of these druggists, "These persons issued regular price currents, and they made it their business to send travellers all over the country with lists and samples." While searching for material for this report a circular fell into the writer's hands, the introduction of which was as follows: "Important information for practical men! Eichler's receipts for liquors, syrups, bitters, &c., will save hundreds of dollars which you are now paying to others for preparing your whiskies, brandies, gins, &c. Liquors made according to these receipts so closely resemble the genuine they often cannot be distinguished; &c.,

&c." Communication was established by the writer with the druggist and the following receipt obtained, a select example of how to make "New York Whiskey":—Concentrated essence bourbon, 4 ounces; compound tincture green tea, 1 pint; tincture of capsicum, 1 pint; tincture of grains of paradise, 1 pint; common whiskey, 20 gallons; water, 20 gallons. The question naturally arises if these factitious liquors can possibly be palmed off upon any persons as genuine. A letter on this point, from the druggist, reads as follows:

PHILADELPHIA, December 10, 1872.

DEAR SIR:—We are in receipt of your favor of this date. In reply we would state that good judges of liquors could of course detect the difference between genuine imported liquors and those artificially flavored, though it is very difficult for any one but a first-class judge to distinguish. They are sold by the greater portion of the trade whenever medium or low price goods are wanted. They improve very much by age. We think you would have little difficulty in selling them to all except your very finest trade. We make a specialty of keeping all kinds of drugs, etc., for liquor dealers.

We remain very truly yours,

———— ————.

The report of the New York Board of Health, made by its chemist, H. Endemann, is as follows:—A careful examination of the various forms of confectionery made and sold in the city, has been made with a view of ascertaining the extent to which it is adulterated or contaminated by unwholesome colors and flavors. Many samples from various places were forwarded by the Assistant Health Inspectors, Drs. Leo and Frankel. The subjects which mostly merit consideration, as regards the deleterious influence of adulteration, on the health of the consumers are: (1) Articles used to supplant sugar, or to give "bulk;" (2) Coloring matters; (3) Flavoring extracts. For the purpose of giving bulk, etc., to the various mixtures and masses, earthy substances and other materials of a deleterious character are often employed. In the case of lozenges, the attempt to mix inorganic substance with the composition was detected in two instances. Lozenges from one firm contained 3-6 per cent. of clay. A powder which was issued by another firm for the same purpose, proved on examination, to be gypsum. Of organic substances, starch is the one most commonly used. Lampblack was found to be an admixture in liquorice gum drops. The coloring materials:—Red coloring matter was found to be either carmine or aniline red. Both are harmless. Other poisonous red colors, as vermillion and red oxide of lead, were detected. Blue colors were either ultramarine or Prussian blue. Both are harmless. Blue colors in which copper forms a part of the composition, seemed not to be in use. Yellow colors formed on chromate of lime, chromate of lead, chromate of baryta, gamboge, saffron and various yellow extracts of plants—which are precipitated from a solution of alum—and the addition of chalk. Of ten samples of yellow colors examined, five were found to consist mainly of chromate of lead. In one case the use of gamboge was evident from chemical analysis, although the use of this article was fully acknowledged by many. Orange colors are a mixture of red and yellow,

and of course are liable to contain the same poisonous substances to which allusion has just been made. Green colors are *pistache*, and various mixtures of blue and yellow, which latter may introduce poisonous substances into the composition. The green colors containing copper and arsenic, paris green, etc., are obsolete for this special purpose. Ginguet's green, which is largely manufactured in Europe for coloring sugar, and which is entirely harmless, was not found in any of the specimens examined. As regards the essences, it is a well known fact that they are nearly all artificial. That the ethers are frequently called into requisition and poisonous if taken in considerable quantities is also well known. Whether the same is the case when they are given in a highly diluted state is questionable. Caution should be exercised however in the use of highly flavored candies. In conclusion, as to the item of coloring materials, I take the liberty of suggesting that the public be cautioned against the indiscriminate use of highly colored common candies, particularly yellow, green and orange. Earthy substances employed instead of sugar should not be tolerated, as for instance, gypsum, the injurious effects of which are often felt, it being a fact, attested by physicians, that well water impregnated with this material occasions certain derangements of the digestive organs. The use of glucose is quite common in certain qualities of candies, but it being harmless further comment is unnecessary.

An undeniable fact meriting consideration is, that certain grades of manufactured candies are sold for less than the actual cost of the raw materials—such as lozenges—and this is still more striking in gum drops. Making every reasonable allowance for water and other materials which are expected in the composition, a profit could scarcely be made, at such low figures as are often met with.

J. C. HUTCHISON,

Chairman of Sanitary Committee.

THE COURSE OF THE TOTAL MORTALITY BY WEEKLY PERIODS DURING THE YEAR 1873.

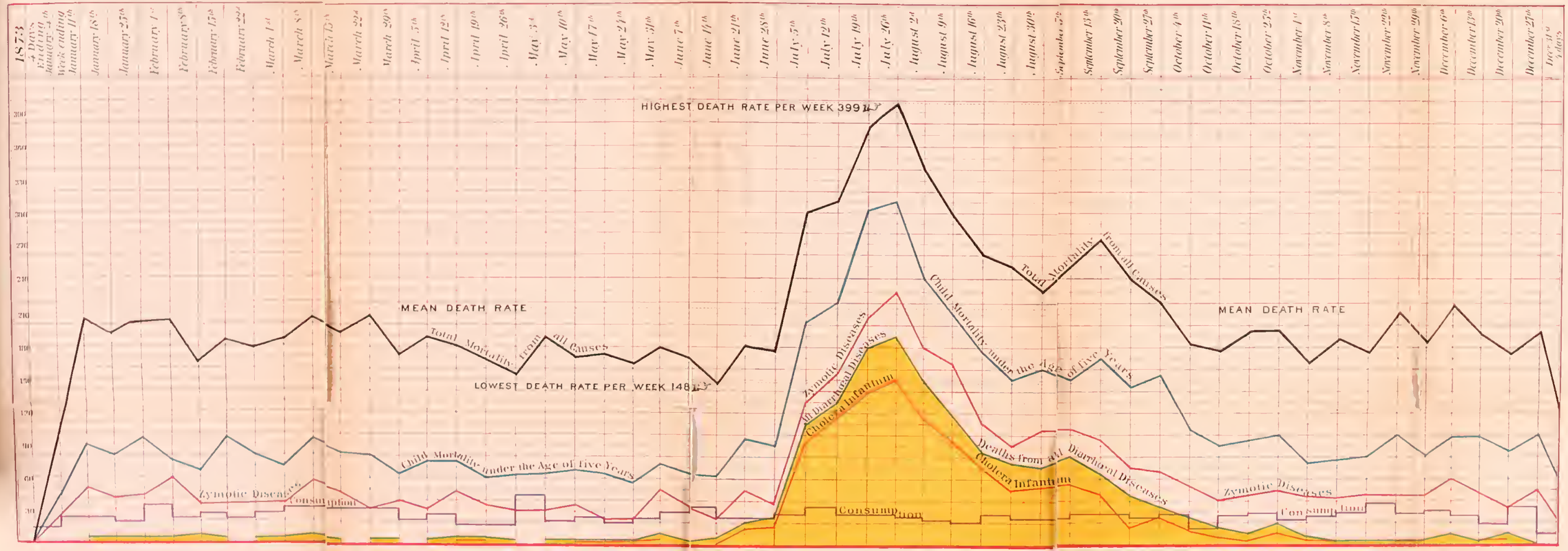
EXPLANATION

- MORTALITY TOTALS
- CHILD MORTALITY UNDER THE AGE OF 5 YEARS
- ALL ZYMOTIC DISEASES

EXPLANATION

- ALL DIARRHŒAL DISEASES
- CHOLERA INFANTUM
- CONSUMPTION

Mortality Lines by Jas Watt M.D Registrar



APPENDIX.

REPORT

OF THE

Register of Vital Statistics.

REPORT

OF THE

REGISTER OF VITAL STATISTICS.

OFFICE OF VITAL STATISTICS,
FEBRUARY 1ST, 1874.

To the Secretary of the Board of Health:

SIR:—I have the honor to submit the following report upon the record of Vital Statistics for the year 1873.

I assumed direction of the bureau, June 1st, 1873. Its operation since that date has been conducted on the same general plan as heretofore, with some few changes, one of which is, the weekly publication of the reports which are sent to all the principal cities of the Union, containing the actual number of deaths during the week, with their ages, nativity, and sex, and comparative weekly mortality for the previous two years. The report also contains a meteorological review for the week compiled by the efficient engineer of Prospect Park, J. Y. Culyer, Esq.

The appointment of another medical gentleman as my assistant has proved to be a very judicious measure and fortunate, in securing the services of a competent, industrious and efficient officer. An adequate and intelligent inspection has thus been insured in the acceptation and rejection of certificates of death. None other than one having his mind properly disciplined by a medical education can possess the judgment necessary in the medico-legal questions that arise in connection with these returns. The returning of a physician's certificate for supplementary information, or for correction, is a matter of some delicacy and is liable to be construed as impertinence on the part of the Register and assistants by those who fail to appreciate the motive for which it is returned; however, we seldom fail to receive the necessary information from all respectable physicians.

By reference to the mortality tables accompanying this report it will be found that 10,958 deaths occurred in the City of Brooklyn during the year, which is 1,680 less than during the year 1872. The difference in the death rate may be accounted for by several reasons; one, that we have had no epidemic of any kind during the year, while during the year 1872, small pox prevailed to such an extent that the victims of that disease numbered 737. This disease did not manifest itself in so severe a form in 1873 and by referring to the table of zymotic diseases, accompanying this report, it will be found that the deaths from small pox only numbered 118.

The difference in this disease alone being 619. Another reason may be cited, to wit: the temperature during the year 1873 was not as great at any period as in the year 1872. Hence, this had the effect of reducing the number of deaths from diarrhœal diseases, especially among infants and even adults.

The zymotic class of diseases numbered in 1872, 4,353. In 1873, we find it to be only 3,280, being a difference of 1,073, due principally to the influence of heat and the difference in temperature.

The death rate during the year 1872, was 31.1 to 1.000 on the basis of the census of 1870.

During the year 1873, on the same basis the death rate would be 27.6; but the question very naturally arises, should we base our calculations upon the census of 1870? And we may ask ourselves, has not Brooklyn increased her population, and if so, how much of an increase have we had?

To answer these questions, I have consulted the Board of Elections, and I find that there were 75,000 registered voters in the city in 1872, and it is considered by all who have made this question a study, that every registered voter represents six persons. This would make the population of the city 450,000. I have made inquiries at the Police Department, and of others whose business gives them some idea of the present population of the city. I can find very few who make it less than the above figures. I have estimated the population to be 435,314. My calculations are based upon the census of 1860 to 1870, where I find the increase of 133,751 in the ten years, this would give an average increase of 13,075 per annum. If these figures are multiplied by 3 which represents the years 1871–2–3 it would give an increase of 39,885, during these years, which if added to the 396,099, which is the census of 1870, would make the population of the city at the present writing 435,314. The rate of mortality with these figures, would be 25.19 per thousand, or one to each 39¾ persons. This, in my opinion, should be recorded as the death rate for the city of Brooklyn for 1873.

The following facts are noticed in reference to the distribution of deaths according to sex and nativity:—There were 7,987 deaths in the native population, of which 4,190 were males, and 3,797 females. Of the foreign population there were 2,981 deaths of which 1,491 were males, and 1,490 females.

Of the Native	males, 4,190.	Foreign	Males, 1,491.
"	females, 3,797—7,987	"	Females, 1,490—10,968.

The number of deaths occurring among children under the age of one year, was 3,286, and the total number under the age of five years, 5,539 or about 50½ per cent. upon the total death rate; 2,486, or about one half of the 50½ per cent. were due directly to zymotic influences.

REVIEW OF THE PRINCIPAL CAUSES OF DEATH IN 1873.

Zymotic Diseases.—This is one of the fluctuating groups of disease, varying much with the temperature and character of the weather. Attention has been called to the difference of the years 1872 and 1873, it being 1,073. Males and females suffer about alike from this class of disease, there only being a difference of 79 in the sexes; 80 per cent. being of native birth, which is, undoubtedly due to the fact that about the same per cent. of deaths occurred among children under the age of five years. The most prominent among these affections are particularized below.

Small Pox.—There were 118 deaths from small pox, or 619 less than

occurred during the year 1872. The sexes were equally divided, 59 of each, and just 50 per cent. were under the age of five years; 102 deaths from this disease occurred during the first six months of the year.

Measles.—The deaths from measles numbered 69, a difference of ten in excess of the number reported during the previous year. The vast majority were children under the age of five years. The character of the disease was not unusual, bronchitis and pneumonia being its principal complications.

Scarlatina.—This disease was not so severe as last year, and some changes are observed in the district of prevalence; the deaths numbered 314, being 13 less than the previous year, 66 per cent. of the mortality occurring among children under five years of age.

Diphtheria and Croup.—These two diseases are often confounded, and many certificates of death make their appearance at the Register's office, with the first cause of death, diphtheritic croup, and others, croup with diphtheria. There were 257 deaths charged to diphtheria, and 325 from croup. This so far as diphtheria is concerned, is greatly in excess of the number of deaths reported for the year 1872, which only amounted to 184, being a difference of 141 deaths from this malady. Croup destroyed the lives of 325, which is only a difference of two under the total of the year previous, which was 327, children under five being the greatest sufferers.

Whooping Cough.—Whooping cough caused the deaths of 135 children under the age of five years, and three at the age of five, making a total of 138. Females being in the excess. It displayed more activity this year than last, when the victims only numbered 98, a difference of forty.

Typhus and Typhoid Fevers.—Typhus fever is accredited with only 3 deaths, one each in the 10th, 13th, and 17th Wards. The year previous has a record of 9 cases. It is very satisfactory to note the decline of typhoid fever; this disease having produced but 103 deaths against 152 in 1872.

Cerebro-spinal Meningitis.—This disease has for its victims 141 persons; 99 per cent. of them being under the age of 20 years, and about the same per cent. being natives of the United States, 51 per cent. not having reached their fifth year.

Intermittent and Remittent Fevers.—The aggregate number of deaths from these two diseases was 145, a large majority of which were adults. The 6th and 10th Wards are credited with 12 in the former, and 14 in the latter. A disease assuming a severe type of bilious remittent fever made its appearance at the foot of State street, in the First Ward, during the early part of June, and for a few days caused some alarm, it having been currently reported by the press that the disease was the yellow fever. However, only two persons succumbed to the disease, one being a young man of 15, and the other a woman of 30 who had aborted, and was at the time in the puerperal condition. The Register in one of these cases, received the certificate of the physician in attendance, with the first cause marked yellow fever, and in the other, pernicious bilious fever. By order of the Sanitary Commissioners both were entered on the book of the record as cases of the latter disease

Diarrhœal Disease.—This class of disease is diminished in number, from that of 1872, by 157. The diseases which are classed under this title are diarrhœa, dysentery, cholera morbus and cholera infantum. The deaths from the first three, numbered 416, and from cholera infantum, 1,112. In

1872, cholera infantum caused the death of 1,248, this being 136 in favor of 1873.

Other Zymotic Diseases numbered 301. Under this head are classified such diseases as erysiplas, pyemia, septicemia, puerperal fever, tonsilitis, and entro-colitis. For the representative number of deaths from each of these causes the reader is referred to the consolidated abstract of mortality following this report.

Enthetic, or Inoculated Diseases.—Syphilis.—There were 12 deaths assigned to this cause, 9 of whichwere congenital, and 3 acquired; 5 were males and 7 females. *Hydrophobia and Malignant Pustule.*—3 deaths occurred from the first-named disease, 2 of which the period of incubation was stated; 1 that of a little girl of 4 years; the period was 85 days. The other a man of 57 years; the time elapsed was 102 days. There were 4 deaths from malignant pustule, one of which was due to the bite of an insect.

Dietic Diseases.—The only two worthy of mention are inanition and intemperance. There were 116 deaths from the former, and all of them occurred in children under one year. Intemperance was the direct cause of 40, and delirium tremens 17, making a total of 57 due to alcoholic abuses; 37 were males, and 27 were females. The majority of deaths occurred between the ages of 30 and 45 years. 45 of the 57 were of foreign birth.

Rheumatism and Dropsy.—The number of deaths from the former was 30; the sexes were equally divided. The latter term "dropsy" I have entirely discontinued since my connection with the office, believing that this is always the result of other diseases, and when certificates of this character are brought to this department they are always returned for further information. The number of deaths from these causes upon the weekly sheets previous to June 1st was 30; 8 males and 22 females.

Cancer caused the death of 169 persons, the locations of which are credited to 25 different portions of the body. 29 were cancer of the breast, 41 cancer of uterus, 44 of the stomach. I am convinced that several of the latter were not cancers, but in all probability chronic gastritis, due to alcoholism. But as the certificates were returned as cancer I have classified them accordingly, although for the purpose of statistical information I do not consider them reliable.

Phthisis Pulmonalis.—This affliction of humanity pays its visits to this city regularly every year, and counts its victims by the thousand. The effect of this disease is to leave many sad blanks in society. All classes are its victims, and in some families where it should never make its appearance it is acquired by both male and female, who dive but too deeply into the pleasures, passions and gayeties of this, the nineteenth century. While I do not forget that many acquire it from the nature of their occupations, the character of the workshop, the illy ventilated houses, churches and places or assemblages, close, unlighted and damp living rooms, where the warm sunlight seldom if ever penetrates, and are in some instances filled with human beings. The deaths from this disease numbered 1,376, or 12.55 per cent of the deaths that occurred during the year 1873. All ages seem to be represented, but the great majority are between the ages of 20 and 40 years. 39 of these deaths are accredited to the colored population. The accompanying tabular statement sets forth the mortality from this disease by wards, with the rate per 1,000 living, according to the census of 1870; also the total mortality from other causes and the per centage of consumption on that total; also the deaths at various ages and in hospitals.

Deaths from Consumption in the City of Brooklyn during the Year 1873.

Wards.	Population, 1870.	Total No. of Deaths.	Deaths from Consumption.	Death Rate per 1,000 of Population.	Per cent. on total Death Rate.	Totals.		U. S.		Foreign.		Under 5 yrs.		5 to 15.		15 to 25.		25 to 40.		40 to 60.		60 to 80.		80 to 100.		Deaths in Hospitals.
						Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	
1	6,476	130	10	1.54	7.69	7	3	2	2	5	1	.....	.....	.....	.....	2	1	2	1	2	1	1	.....	.. ..	.....	...
2	9,117	228	22	2.41	9.86	9	13	2	7	7	6	.....	.....	.....	2	2	4	4	3	3	3	.....	1	.....	... ..	....
3	9,984	136	14	1.40	10.37	7	7	4	4	3	3	1	.....	.....	.....	2	1	3	2	.....	1	1	2	.....	1	...
4	12,087	237	85	2.89	14.76	16	19	8	10	8	9	.....	.....	.....	1	2	3	7	7	7	6	.....	2	.....	.....	....
5	20,490	519	68	3.31	13.01	38	30	12	10	26	20	2	.....	.....	1	4	6	18	10	12	10	2	3	.. ...	.. ...	...
6	28,296	934	171	6.04	18.34	91	80	31	23	60	57	5	.....	2	4	16	13	40	40	21	19	7	4	.....	.....	61
7	23,312	509	65	2.91	12.57	34	31	14	17	20	14	1	1	1	1	8	4	7	16	11	8	5	1	1	.....	....
8	9,592	344	39	4.06	11.30	20	19	10	5	10	14	1	1	1	2	3	4	4	6	7	4	4	2	. ....	.....	....
9	15,279	433	72	4.71	16.21	36	36	14	17	25	19	5	3	3	1	5	6	10	17	11	8	2	1	.....	.....	....
10	34,592	772	105	3.03	13.60	55	50	26	18	29	32	2	1	2	1	12	17	20	22	18	7	1	2	.....	.....	....
11	21,243	489	71	3.34	14.70	40	31	16	21	24	10	2	1	1	1	6	7	19	14	11	8	1	.....	... ..	.. .	11
12	18,302	592	64	3.50	10.81	32	32	6	7	26	25	2	2	.....	2	4	8	18	11	13	9	.....	.....	.....	.....	....
13	18,711	407	40	2.13	9.82	24	16	20	14	4	2	1	....	.....	.....	6	3	7	7	8	5	1	1	1	.....	....
14	20,649	629	80	3.88	12.71	35	45	15	18	20	27	2	.....	1	.....	4	12	16	15	8	12	4	5	.....	1	....
15	18,406	431	65	3.55	15.08	36	29	20	18	16	11	1	.....	2	.....	5	5	12	13	13	9	3	2	.....	.....	...
16	26,438	1,155	135	5.10	11.68	77	58	27	25	50	33	8	8	4	3	17	15	19	19	24	11	5	2	.....	.....	...
17	17,353	526	43	2.47	8.17	24	19	11	7	13	12	....	.....	.....	.....	3	3	12	8	6	7	3	1	.....	.....	...
18	11,607	446	59	5.08	13.22	30	29	12	10	18	19	.....	.....	2	.....	6	7	10	9	8	7	4	5	.....	1	19
19	16,321	444	45	2.75	10.13	17	28	10	15	7	13	1	2	.....	.....	5	5	6	9	3	10	2	1	.....	1	....
20	19,179	365	44	2.29	12.09	20	24	15	17	5	7	1	1	.....	.....	5	6	8	8	2	5	4	4	.....	.....	2
21	27,904	886	92	3.29	10.39	53	39	29	23	24	16	6	3	1	2	8	9	18	16	16	9	3	. . ..	1	.....	....
22	11,761	351	37	3.14	10.33	25	12	16	5	9	7	1	.....	1	2	8	7	6	1	7	2	1	.....	1	.....	....
Totals .	396,099	10,968	1,376	3.47	12.55	726	650	317	293	409	357	42	23	21	23	133	146	261	254	211	161	54	39	4	4	93

Marasmus.—The deaths classified under this title seem to admit of a very wide range, although four-fifths of the mortality from this cause is assigned to children that have not reached their 5th year. Yet the other fifth is beyond that age, and certificates reach the office of persons at the age of 90. The question would naturally arise, do persons of this age die of phthisis abdominalis, or is it simply due to old age, debility and a generally breaking down of the system. Certain it is that they do not have the same characteristic features of the young, whose death might well be accredited to some acute disease that has left the organs of digestion in such a condition that they will not perform their functions of general repair to the system. We notice this fact when the season for cholera infantum has left many of these little ones in such a sick and debilitated state that they never recover their usual strength, but fail and fail until death takes place, and then it is generally credited to marasmus or inanition. The total number of deaths accredited to this cause is 533, of which number 285 were males and 248 females.

Hydrocephalus and Tubercular Meningitis.—These two diseases have caused, in the aggregate, 358 deaths. The diseases are often confounded in the diagnosis, and hence only a passing notice of them. Children under the ages of 5 years seem to be the principal sufferers.

Local Diseases.—Diseases of the nervous system occasioned the death of 1,384, of which number 748 were males and 136 females.

Meningitis.—There were 198 deaths due to this disease; two-thirds of the number were children under the age of five years. The Register has reason to think that many of the deaths credited to cerebro-spinal meningitis were of this form, the result of simple inflammation, and were not cases of malignant purpuric or spotted fever, to which the name of cerebro spinal meningitis has been unfortunately appended.

Convulsions.—Convulsions is charged with causing 628 deaths, of which 338 were males and 290 were females; 440 were under the age of one year, and 602 had not reached their 5th year. The Register, since his connection with the department, has endeavored, as far as possible, to ascertain the cause of convulsions in each and every certificate. But this he finds to be impossible at all times, and physicians in their replies to his request for further information, simply state that they were called to see the child in haste, and no diagnosis could be made other than that upon the certificate. I make this statement for the reason that I have understood that this classification has been somewhat criticised and said to be devoid of meaning.

Apoplexy.—The number of deaths due to this cause is 186, of which 101 were males and 85 females. 118 were of foreign birth. For the purpose of deductions I do not consider this class as reliable. The reason assigned for this is that many of the cases were those of the Coroners, and cases in which no post mortems have been made, consequently I do not consider this correct.

Congestion of the Brain.—Congestion of the brain caused the death of 161 persons; 108 had not reached their 5th year. Of this number 87 were males and 72 females.

Sun Stroke.—The heat of the Summer being very evenly balanced, the deaths from this cause are comparatively small, there being only 5 deaths; 3 occurred among the laboring classes who are exposed to the direct effects of the heat. 4 were males and 1 female.

Diseases of Circulatory System.—This class of disease occasioned 401 deaths. On the table following this report will be found the different

TABLE No. I.

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES,

REGISTERED FOR THE TWELVE MONTHS ENDING DECEMBER 31st, 1873

CAUSES OF DEATH.	NATIVITY: U. States	NATIVITY: Foreign	Colored	Under 1 year	1	2	3	4	Total under 5 years	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100 and upwards	Total by Sexes	Total both Sexes
	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M.	F.	
CLASS I.—ZYMOTIC DISEASES.																															
Order 1.—*Miasmatic.*																															
Small Pox	46 48	13 11	... 4	10 10	4 3	5 12	6 2	3 4	28 31	3 2	4 4	5 1	5 3	4 3	1 2	2 4	1 2	4 2	... 1	1 2	1 1	... ...	... ...	1 ...	... ...	... ...	... ...	... ...	... ...	59	59	118
Measles	39 30	... ...	... ...	7 4	10 7	10 12	7 4	4 1	38 28	1 1	... 1	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	39	30	69
Scarlatina	157 144	4 9	1 ...	11 8	14 16	29 31	32 26	20 19	106 100	40 34	9 15	1 1	1 1	1 1	1 ...	... ...	... ...	1 1	... ...	... ...	... ...	... 1	... ...	... ...	... ...	... ...	... ...	... ...	... ...	161	153	314
Diphtheria	121 122	5 4	... 2	9 6	18 12	25 27	14 27	20 15	86 87	29 26	2 7	1 2	2 2	3 ...	2 ...	1 ...	... ...	1 ...	... 1	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	126	126	252
Croup	170 144	7 4	... ...	17 12	20 22	36 37	47 29	23 24	152 124	20 20	5 3	... 1	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	177	148	325
Quinsy (Tonsilitis)	4 2	2 ...	1 ...	... ...	... ...	1 ...	1 1	1 ...	3 1	1 1	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... 1	... ...	... 1	... ...	... ...	... ...	... ...	... ...	6	2	8
Whooping Cough	62 74	... 2	1 3	38 40	9 19	7 10	4 4	4 2	60 75	2 1	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	62	76	1 38
Typhus Fever	1 1	1 ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	1 ...	... ...	... ...	1 ...	1 ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	2	1	3
Typhoid Fever	33 22	23 25	... ...	... ...	... 1	... 2	1 ...	1 ...	3 2	... 1	1 1	7 4	7 9	9 6	8 4	4 ...	2 ...	2 2	2 4	5 1	2 1	2 6	2 1	... 4	... 1	... ...	... ...	... ...	... ...	... ...	56	47	103
Erysipelas	19 20	6 7	... ...	8 11	... 3	... ...	... ...	... ...	8 14	1 1	... 1	1 ...	... 1	... 1	1 1	1 1	3 2	2 ...	... ...	1 1	1 ...	2 ...	3 1	... 2	1 1	... ...	... ...	... ...	... ...	... ...	25	27	52
Puerperal Fever	... 13	... 24	1 ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	6 ...	12 ...	6 ...	9 ...	2 ...	2 ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	...	37	37
Pyæmia	10 5	10 12	... ...	3 ...	... ...	... ...	... ...	... ...	3 ...	1 1	1 1	... 1	1 2	2 3	1 2	1 1	3 1	3 ...	1 1	1 ...	2 ...	3 ...	1 ...	... ...	... ...	... ...	... ...	... ...	... ...	20	17	37
Septicæmia	1 7	... 2	... ...	... ...	1 ...	... ...	... 1	... ...	1 1	... ...	... 1	... ...	1 ...	2 ...	1 ...	2 ...	... ...	... ...	... ...	... ...	1 ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	1	9	10
Dysentery	59 38	15 24	... ...	20 16	19 9	8 5	4 2	4 2	55 34	7 3	... 2	1 ...	1 ...	... ...	... ...	1 1	2 3	... 1	... 4	1 4	1 2	2 4	1 ...	2 3	... 1	... ...	... ...	... ...	... ...	... ...	74	62	136
Diarrhœa	99 98	20 6	1 ...	69 68	24 19	... 3	2 1	... ...	95 91	1 1	1 ...	1 ...	2 ...	... ...	... 1	... ...	1 ...	1 2	... 5	1 2	2 ...	... 2	2 1	3 2	3 3	1 1	... 1	... ...	... ...	... ...	119	104	223
Cholera (Asiatic)	1 ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	...	...	...
" (Morbus)	13 20	25 18	... ...	2 3	1 ...	... 1	1 ...	... ...	4 4	1 1	1 3	2 ...	2 4	1 2	1 1	1 1	5 3	8 5	1 2	1 2	1 5	7 4	1 1	... 2	1 ...	... ...	... ...	... ...	... ...	38	38	76
" (Infantum)	574 537	... 1	6 9	420 391	143 140	9 7	2 ...	... ...	574 538	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	574	538	1112
Entero Colitis	10 7	... ...	... 1	7 2	2 2	... 1	1 ...	... 1	10 6	... ...	... ...	... 1	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	10	7	17
Cerebro Spinal Meningitis	51 53	5 5	1 ...	14 9	2 2	6 7	7 3	4 5	33 26	5 8	9 9	6 5	1 3	... 4	1 ...	... ...	1 ...	... 1	... ...	1 ...	... 1	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	56	58	114
Remittent Fever	31 42	12 20	... 2	5 5	4 4	1 1	4 4	3 4	17 21	3 5	3 ...	1 2	... 7	1 5	3 1	4 2	1 ...	3 1	... 2	2 3	... 1	... 6	1 2	2 1	1 1	... 2	1 ...	... ...	... ...	... ...	43	62	105
Intermittent Fever	15 12	7 6	... ...	3 1	... 1	1 1	2 ...	... ...	6 2	2 2	1 1	1 1	2 2	1 2	1 1	1 3	2 3	... ...	1 1	1 ...	... 1	... 2	... ...	... ...	... ...	... ...	... ...	... ...	... ...	22	18	40
Congestive Fever	1 4	... 3	... ...	... ...	... ...	... ...	... ...	... ...	... ...	1 ...	... 1	1 1	... ...	... ...	1 ...	1 ...	... 1	... ...	1 ...	... ...	1 ...	... 1	... ...	... ...	... ...	... ...	... ...	... ...	... ...	1	7	8
Total Miasmatic Diseases	1517 1443	155 183	12 21	643 586	280 258	139 158	134 197	84 78	1282 1184	117 109	38 48	28 20	24 41	23 41	21 21	16 27	21 18	26 16	7 19	13 14	11 9	17 25	14 8	7 16	4 5	... 3	2 ...	... ...	... ...	1672	1626	3298
Order 2.—*Enthetic or Inoculated.*																															
Syphilis	4 7	1 ...	... ...	1 4	5 ...	... ...	... ...	... ...	4 5	... ...	... ...	1 ...	1 ...	... ...	1 ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	5	7	12
Syphilitic Disease of	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	...	...	...
Hydrophobia	1 1	1 ...	... ...	... ...	... ...	... ...	... ...	1 ...	1 1	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	1 ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	2	1	3
Malignant Pustule	3 ...	1 ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	1 ...	1 ...	... ...	1 ...	1 ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	4	...	4
Total Enthetic Diseases	8 8	3 ...	... 1	4 5	... ...	... ...	... ...	... 1	4 6	1 ...	1 1	1 1	... 2	... 1	1 ...	... ...	... ...	... ...	... ...	1 ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	11	8	19
Order 3.—*Dietic.*																															
Inanition (Privation, etc)	63 53	... ...	1 ...	61 52	... ...	1 ...	... ...	... ...	62 52	... 1	... ...	... ...	... ...	... ...	... ...	... 1	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	63	53	116
Alcoholism { *a.* Intemperance	6 1	17 16	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	2 ...	4 1	7 5	4 1	2 5	1 2	1 5	1 ...	1 ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	23	17	40
Alcoholism { *b.* Delirium Tremens	4 1	10 2	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	1 ...	1 ...	3 ...	3 2	3 ...	... ...	3 ...	1 ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	14	3	17
Purpura	3 1	... ...	... ...	3 ...	... ...	1 ...	... ...	... ...	3 1	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	3	1	4
Scurvy	... ...	... 1	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	1 ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	...	1	1
Want of Breast Milk	2 1	... ...	... ...	2 1	... ...	... ...	... ...	... ...	2 1	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	2	1	3
Total Dietic Diseases	78 57	27 19	1 ...	66 53	... ...	1 1	... ...	... ...	68 54	... 1	... ...	... ...	3 ...	5 1	10 6	7 4	5 5	1 2	4 3	2 ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	105	76	181

TABLE No. I.—(*Continued.*)

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES.

REGISTERED FOR THE TWELVE MONTHS ENDING DECEMBER 31ST, 1873.

CAUSES OF DEATH.	NATIVITY. U. States	NATIVITY. Foreign	Colored	Under 1 year.	1	2	3	4	Total under 5 yrs.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100 and up.	Total by Sexes	Total both Sexes
	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.
CLASS II. CONSTITUTIONAL																															
Order 1.—*Diathetic.*																															
Gout		1															1													1	1
Rheumatism	9 6	6 9	1	1	1				1 1	2 1	1	1		1		3 2	2	1 2	1	1	3	3	1 1	1						15	15	30
Dropsy	4 8	4 14	1	1	1				1 1	1		1	1				2 2	1 2	5	1	1	1 6	2	2						8	22	30
Cancer of Arm	2											1							1											2		2
" " Axilla		1																			1									1		1
" " Bones																1															1	1
" " Brain		1															1													1		1
" " Breast	18	11																3	5	9	4	2	2	2	2					29	29
" " Face	2	1						1								1						1								1	2	3
" " Intestines	1	5					1									1			1	1		1	2							5	1	6
" " Jaw		1																				1									1	1
" " Kidneys	1																	1												1		1
" " Liver	3	4 2																	1	1	1	2	2	1	1					4	5	9
" " Lungs	1	1 1														1	1					1								1	2	3
" " Mesentery		1																													1	1
" " Neck		2 1																1		1		1	1							2	1	3
" " Oesophagus		2																1		1											2	2
" " Ovary	1	1																			1	1									2	2
" " Pancreas	1																						1							1		1
" " Rectum	2	1 1															1	1		1				1						1	3	4
" " Stomach	5 2	14 23														1	1	1	4	2	1	2	2	6	5	3	5	3	1	1	2	2	19	25	44
" " Spleen														1																	1	1
" " Thigh		1																		1											1	1
" " Throat	1	3															1			1			1		1						3	1	4
" " Testicles	1	1																			1			1							2		2
" " Tongue		2													1								1								2		2
" " Uterus	20	21															10	9	5	6	3	3	2	2							41	41
" " Noma	1 2				1				1 1	1															1					1	2	3
Fungus Hematodes		1 1																			1	1								1	1	2
Total Diathetic Diseases	24 68	49 90	1 1	1 3	1				1 2	4 4	2	1	3	1	1	1	1	5	19	6	20	6	16	4	26	7	16	10	11	13	21	5	8	3	8	2	1	2	73	158	231
Order 2.—*Tubercular.*																																	
Scrofula	15 12	3		8 6			4 3		12 9	1	3		2	1																15	15	30
Lumber Abscess (Psoas Abscess, etc.)	3	1 1		1					1	1		1							1											4	1	5
Tabes Mesenterica	274 236	11 12	5 5	172 157	62 52	23 10	2 8	3 2	262 227	7 2	1 1	1 1	1 1	2	1	1	1	1	1	3	3	1	2	2	1	3	3	2	1	1	285	248	533
Phthisis Pulmonalis	300 307	398 371	19 20	10 10	9 4	6 6	6 2	3 2	34 24	5 4	7 13	20 31	64 61	91 97	93 109	83 78	79 72	61 53	55 44	40 29	27 20	23 17	9 14	5 9	1 2	1 1	1			698	678	1376
Hydrocephalus	147 107	4	1 1	72 58	31 22	21 15	8 5	4 2	136 102	12 4	2 1							1												151	107	258
Tubercular Meningitis	56 41	2 1	1	24 15	9 11	8 6	1 2	4 5	46 39	7 1	1	1		1		1	1		1											58	42	100
Total Tubercular Diseases	795 703	416 388	26 26	287 246	111 89	62 40	17 17	14 9	491 401	32 12	15 15	22 36	65 64	92 98	91 109	84 80	80 72	63 54	56 44	45 29	27 23	24 19	11 15	8 12	1 4	2 2	1 2			1211	1091	2302

TABLE No. 1.—*(Continued.)*

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES,

REGISTERED FOR THE TWELVE MONTHS ENDING DECEMBER 31st, 1873.

| CAUSES OF DEATH. | NATIVITY. U. States | | NATIVITY. Foreign | | Colored. | | Under 1 year. | | 1 | | 2 | | 3 | | 4 | | Total under 5 years | | 5 | | 10 | | 15 | | 20 | | 25 | | 30 | | 35 | | 40 | | 45 | | 50 | | 55 | | 60 | | 65 | | 70 | | 75 | | 80 | | 85 | | 90 | | 95 | | 100 and up. | | Total by Sexes. | | Total both Sexes. |
|---|---|---

TABLE I.—(*Continued*)

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES,

REGISTERED FOR THE TWELVE MONTHS ENDING DECEMBER 31st, 1873.

CAUSES OF DEATH.	NATIVITY. U. States. M.	U. States. F.	Foreign. M.	Foreign. F.	Colored. M.	Colored. F.	Under 1 year. M.	Under 1 year. F.	1 M.	1 F.	2 M.	2 F.	3 M.	3 F.	4 M.	4 F.	Total under 5 years M.	Total under 5 years F.	5 M.	5 F.	10 M.	10 F.	15 M.	15 F.	20 M.	20 F.	25 M.	25 F.	30 M.	30 F.	35 M.	35 F.	40 M.	40 F.	45 M.	45 F.	50 M.	50 F.	55 M.	55 F.	60 M.	60 F.	65 M.	65 F.	70 M.	70 F.	75 M.	75 F.	80 M.	80 F.	85 M.	85 F.	90 M.	90 F.	95 M.	95 F.	100 and up. M.	100 and up. F.	Total Sexes M.	Total Sexes F.	Total both Sexes
CLASS III.—LOCAL.																																																												
Order 3.—*Respiratory System.*																																																													
Emphysema (Asthma)	1	5	4	6			1	2						1			1	3														1		1			1	2		1	4				1	1											5	11	11
Laryngeal Tumor	1																						1																																						1		16
Pulmonary Abscess			1																																						1																	1		13
" Paralysis		1																					1																																							
Oedema Glottidis		1	2																												1																											1		
Totals	458	398	316	192	18	21	198	159	51	49	58	51	18	23	10	7	333	288	11	17	8	12	10	7	14	8	22	17	22	16	25	26	27	24	36	17	20	24	25	26	27	16	32	18	22	24	19	17	4	14	4	7	1	3	1		674	590	1264
Order 4.—*Digestive System.*																																																												
Gastritis	7	18	5	15				2		3			1	1			1	6		2		1	1			3		1		3	2	3		3	1	3		2	1	1			3	2	1		1		1	1		2					12	33	45
Enteritis	25	17	7	6			10	8	4	1	1		1		2	1	18	10	1		1		2	6	1	1	1				2	2	1		1	2	1	1	1	1				1	1	2										32	23	55
Gastro Enteritis	18	22	8	5			13	15	5	2	1	1		1			19	19			1		1		1		1		3	1		1					1					2							1								26	27	53
Peritonitis	14	25	11	26		2	4	5	1	1		1				1	5	8			1		1	2	1	9	3	6	1	8	6	6	3	3		2	2	2	3	1		1	1	1			1		1			1					28	54	79
Ascites	2	2															1	1	1																1			1																				2	3	5
Ulcera. Intestines (Perforation?)	3																						1		1											1																							3		3
Hernia of "	1	2		2	1	1																												2						1		1		1													1	4	5
Hemorrhage of Bowels	1	1	1				1	1									1	1																																										2	1	3
Intussusception of Intestine	9	2	1				7			1							8				1														1		1																					10	2	12
Stricture of Intestines		1		3																														1					2																				4	4
Ulcer of the Stomach	3	1	2	2				1							1		1	1											1		1					1	1				1																		5	3	8
Colic (Bilious)	3	2	2				1	2									1	2									1			1										1			1															5	2	7
Fatty Degeneration of Liver	4	1	2	4																							2						2		1	2			1		1			1													6	5	11
Cirrhosis of Liver	10	6	18	16																		1					1	1	5	5	1	2	2	4	3	2	5	3	2	2	3	1	4	1			1	1				2					28	22	50
Hepatitis	5	4	13	6																	1							1		1	1	2	5	5	1	3	2	2	2	1	2	2	3	2												18	20	38
Jaundice	10	5	4	2			9	4									9	4			1								1				1		1				1	1				1	1					2						14	7	21
Colic (Lead)	3		4		1																		1		1		1		1		1				1																									
Hepatic Abscess	3	1	2	2																														1	1	1			2	1	2																	5	3	8
Lingual Abscess		1						1										1																																										1	1
Stricture of Oesophagus			1																																				1																			1		1
Abdominal Tumor		1																																																							1	1
Stomatitis	1	2					1	2									1	2																																									1	2	3
Parotitis	1																			1																																							1		1
Leucocythemia			1																																																							1		1
Totals	123	114	85	89	2	3	46	41	10	7	3	2	2	2	2	3	64	55	3	2	2	5	5	6	6	14	10	10	12	18	14	17	15	19	10	16	12	13	13	11	10	6	14	10	8	4	3	3	1	5	3	2	1		218	203	421
Order 5.—*Urinary System.*																																																												
Nephritis	11	15	2	2			1	2	1		1	2	1	1		1	4	6	5	3	1	1	1	1		3				2				1																1								13	17	30
Nephria (Bright's Disease)	50	30	45	56	1	2			1				2		1		4		1		2		3	6	1	4	6	8	9	12	15	13	3		16	4	11	7	5	5	5	6	9	2	5	5		3	1	1	1					95	86	181
Uremia	8	8	5	7			1						1				2		2		1			1		2	4	2			4			1	1			1	1			1	2				1		1						13	15	28
Diabetes	1	1								1							1					1																																					1	1	2
Calculus	1		1																																1							1																2		2
Cystitis	6	1	7	1			1	1									1	1																	1				1	2			5		2		1		1						13	2	15
Prostatitis	2		1																																						1				2												3		3
Prostatic Tumor	1																																											1														1		1
Congestion of Kidneys		1	1											1				1																																									1	1	2
Abscess of Kidneys		1	2																								1			1																													2	1	3
Stricture of Urethera	2				1																																																							2		2
Vesico Rectal Fistula	1																						1																																					1		1
Totals	83	57	64	66	2	2	2	3	2		2	2	4	2	1	1	12	8	8	3	4	1	5	8	2	7	9	12	11	14	14	17	3	10	19	5	12	7	6	7	9	6	11	4	11	6	4	4	4	2	2	2	1		147	123	270

TABLE No. I.—(*Continued.*)

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES.

REGISTERED FOR THE TWELVE MONTHS ENDING DECEMBER 31ST, 1873.

CAUSES OF DEATH.	NATIVITY. U. States		NATIVITY. Foreign		Colored.		Under 1 year.		1		2		3		4		Total under 5 yrs.		5		10		15		20		25		30		35		40		45		50		55		60		65		70		75		80		85		90		95		100 and up.		Total by Sexes.		Total both Sexes.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
CLASS III.—LOCAL.																																																									
Order 6.—*Generative System.*																																																											
Ovarian Tumor		2		11																					1	1	1	2	1			3		2		2																							13		13	
Pelvic Hæmatocele				1																								1																													1		1	
Metritis (not Puerperal)				5																					2			1	1					1																							5		5	
Metro-Peritonitis (not Puerperal)		3		3																					1	1		2				1		1																							6		6	
Uterine Tumor		1																										1																													1		1	
Total Generative Diseases		6		20																					4	2	1	7	2		1	4		3		2																							26		26	
Order 7.—*Locomotory System.*																																																										
Morbus Coxarius	1	3				1														2		1	1																																			1	3	4	
Osteo-Myelitis	3							2										2																																								3		3	
Necrosis of Jaw			1																																																						1		1	
Spinal Disease (Pott's)	5	3						1	1		1	1		1				2	3		3																																					5	3	8	
Caries of Knee Joint	1	1																								1	1																														1	1	2	
Rachitis	1	1						1										1	1																																						1	1	2	
Total Locomotory Diseases	11	8	1		1		4	2		1	1		1				5	4	2	3	1	1		1	1												1			1																				12	8	20	
Order 8.—*Integumentary System.*																																																										
Abscess (Phlegmon)	1	3	1					1	3									1	3																																						2	3	5	
Carbuncle	1	1	1																								1	1																													2	1	3	
Pemphigus		1						1										1																																							1	1	
Elephantiasis			1																																																					1		1	
Total Integumentary Diseases	2	5	3					1	4									1	4								1	1	2																												5	5	10	
CLASS IV.—DEVELOPMENTAL.																																																										
Order 1.—*Children.*																																																										
Premature Birth	87	79					1	87	79									87	79																																								87	79	166	
Preternatural Birth	3	1						3	1									3	1																																							3	1	4	
Cyanosis	30	26						30	26									30	26																																							30	26	56	
Atresia Ani	14	3					1	14	3									14	3																																							14	3	17	
Atalectasis Pulmonum	10	4						10	4									10	4																																							10	4	14	
Spina Bifida	6	4						6	4									6	4																																							6	4	10	
Umbilical Hemorrhage	3	3						3	3									3	3																																							3	3	6	
Total Devel. Dis. of Children	153	120					2	153	120									153	120																																							153	120	273	
Order 2.—*Women.*																																																										
Chlorosis		2																							2	2		1																													3	3	
Childbirth		3		12																					1	3	3	2	1	1																											15	15	
Flooding		7		10																					9	4	1	5	2	1																											17	17	
Puerperal Metritis (Metro Perit.)		19		16																					7	8	8	7	2	1																											3	35	
Puerperal Convulsions		12		8																						2	4	6	1																													20	20	
" Mania		1		1																							1	1																															2	2	
Abortion				1																								1																															1	1	
Rupture of Uterus				1																								1																															1	1	
Total Diseases of Women		44																							19	17	21		9	3																											91	94	

TABLE No. I.—(*Continued.*)

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES,

REGISTERED FOR THE TWELVE MONTHS ENDING DECEMBER 31st, 1873

CAUSES OF DEATH.	NATIVITY. U. States. M.	U. States. F.	Foreign. M.	Foreign. F.	Colored. M.	Colored. F.	Under 1 year. M.	Under 1 year. F.	1 M.	1 F.	2 M.	2 F.	3 M.	3 F.	4 M.	4 F.	Total under 5 years M.	Total under 5 years F.	5 M.	5 F.	10 M.	10 F.	15 M.	15 F.	20 M.	20 F.	25 M.	25 F.	30 M.	30 F.	35 M.	35 F.	40 M.	40 F.	45 M.	45 F.	50 M.	50 F.	55 M.	55 F.	60 M.	60 F.	65 M.	65 F.	70 M.	70 F.	75 M.	75 F.	80 M.	80 F.	85 M.	85 F.	90 M.	90 F.	95 M.	95 F.	100 and up. M.	100 and up. F.	Total by Sexes. M.	Total by Sexes. F.	Total both Sexes.
CLASS IV.—DEVELOPMENTAL.																																																															
Order 3.—*Age.*																																																															
Old Age	19	36	53	88																															1		1		1		5	7	4	20	25	26	16	27	11	22	6	15	4	2		3	72	124	196
Senile Gangrene	1	1																																	1	1										1													1	1	2
Total Diseases of Age	20	37	53	88																															2	1		1		1	5	7	4	20	25	26	17	27	11	22	6	15	4	2		3	73	125	198
Order 4.—*Nutrition.*																																																															
Atrophy	18	10		1	1		13	8	3	2							16	10															1					1				1					1	1										19	11	30
Asthenia (Debility, Infantile)	59	48	18	31		1	45	34		2		2	1		1		47	40	1		1	2	1		1				2	1		2	1	1	3		2	2	3	2	2	1	1	6	3	9	2	2	3	6	3	1		1	1			77	79	156
Total Diseases of Nutrition	77	58	19	32	1	1	58	42	3	4		2	1		1		63	50	1		1	2	1		1				2	1		2	2	1	3		2	2	3	2	2	1	2	6	3	9	5	3	3	6	3	1		1	1			96	90	186
CLASS V.—DEATHS BY VIOLENCE.																																																															
Order 1.—*Accident & Negligence.*																																																														
Fracture of Skull			1																												1																												1		1
Wounds	12	1	18	2											1		1		1		2	1	1				2		1		7		3		1		2	1			2		1	1	2												30	3	33
Strangulation by Hanging	1																														1																												1		1
Killed by Vehicles	15	1	3				1				1		1		2		5		4	1	3		1		2		1		2																														18	1	19
Falls	21	3	31	4					2	2		1			3		6	2	2	1	1		3	1	4		1		4		4		1		7		2	1	3		6		2		2	2											52	7	59
Burns	10	8	3	6					2	1	3	1	3		1		9	2	1	2		1		1				1	2	1		1		2		1		2		1																		13	14	27
Scalds	8	5	1				1		2		2		2	2	2		8	4		1	1																																									9	5	14
Poisons	5		1				2		1								3												1								1				1																		6		6
Neglect and Exposure		1	1			1																												1		1																						1	1	2
Suffocation (Asphyxia) by	7	4	1				7	1									7	4																																										8	4	12
Drowning	24	4	50	3			1		1				1				2	2	3	2	7		2		4		8	1	11	1	16		6		6		6		1	1	1				1												74	7	81
Total by Accident and Neg	103	27	110	15		1	11	7	8	1	7	2	6	2	9	2	11	14	11	7	18	2	7	2	14		12	1	20	3	28		12		14	3	12	3	4	3	10	1	4	1	5	2											213	42	255
Order 2.—*Homicide.*																																																															
Homicide by Arson		1																													1																												1	1
Wounds by Blows	1	1	2	1																															1	1		1																						3	2	5
" " Pistol-shot	1																																					1																								1		1
" " Stone	2																																					1																								2		2
" " Knife			1																																																												1		1
Total Homicidal Deaths	4	2	3	1																											1					1	1	1	2			2	1							1										7	3	10
Order 3.—*Suicide.*																																																														
Drowning		1	2	2																													1		1	1			1								1												2	3	5
Hanging			3	2																											1		1												1	1			1										3	2	5
Leap from a Height			1																												1																													1		1
Opium	1			1																																																											1	1	2
Paris Green			1	3																													1		1												1	1													1	3	4
Razor	1		3																																1												1														4		4
Pistol-shot	5		4																																1												3		5		1		1								5		9
Surgeon's Knife	1																																																														1		1
Total Suicidal Deaths	8	1	14	2																											1		1	2	3	2	1		1		1	1	6	1		1	1	2	2		2								22	9	31
Order 4.—*Unknown Causes.*																																																															
Unknown Causes	3		1				3																												1																								4		4

TABLE No. II.

DEATHS OCCURRING EACH WEEK, BY CLASSES,

FOR THE YEAR ENDING DECEMBER 31st, 1873.

MORTALITY BY WEEKS ENDING	JANUARY				FEBRUARY				MARCH					APRIL				MAY					JUNE				JULY				AUGUST					SEPTEMBER				OCTOBER				NOVEMBER					DECEMBER					Totals.	Per cent.
SATURDAY	4	11	18	25	1	8	15	22	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	6	13	20	27	31		
Zymotic Diseases	22	41	44	10	56	37	39	38	38	53	47	36	39	34	49	34	30	41	42	35	37	50	33	31	56	44	143	158	212	232	185	158	118	99	107	109	103	75	7	62	51	53	51	54	49	46	48	43	71	52	42	50	28	3,517	32.07
Constitutional Diseases	25	43	44	33	57	39	50	43	48	50	47	47	45	45	37	38	41	59	42	39	45	48	45	49	52	44	40	62	66	66	65	57	50	56	54	62	67	67	66	64	43	53	50	41	39	47	50	41	44	37	39	41	22	2,539	23.15
Local Diseases	56	97	92	106	63	76	84	83	81	82	86	99	73	80	80	73	71	72	74	77	62	60	66	54	50	69	87	57	68	77	67	64	63	66	48	60	77	71	63	47	72	60	77	52	76	63	85	88	87	89	72	84	60	3,849	35.09
Developmental Diseases	8	15	18	13	21	13	10	16	11	11	13	15	14	20	12	18	9	9	8	10	13	8	20	9	15	11	19	24	21	15	13	17	13	21	12	12	20	20	17	6	10	17	13	7	16	16	21	11	13	15	19	15	8	751	6.85
Deaths by Violence	1	4	1	8	4	3	2	3	3	5	5	5	3	8	3	7	5	6	5	11	7	14	6	5	7	11	12	6	9	9	8	5	15	8	9	7	7	3	7	3	3	9	2	8	8	5	8	2	5	3	2	4	3	312	2.84
Totals	112	203	199	200	201	168	185	183	181	201	198	202	174	185	186	170	156	187	171	172	164	180	170	148	180	179	301	307	376	399	338	295	259	250	230	250	274	239	223	182	179	192	193	165	188	177	212	185	220	196	174	191	121	10,968	100.00

TABLE No. III.

DEATHS FROM ZYMOTIC DISEASES IN BROOKLYN.

DEATHS FROM SMALL-POX, MEASLES, SCARLATINA, DIPHTHERIA, WHOOPING-COUGH, TYPHOID FEVER, TYPHUS FEVER, CHOLERA INFANTUM, DIARRHŒAL MALADIES, AND OTHER ZYMOTIC DISEASES.

REGISTERED DURING THE YEAR ENDING DECEMBER 31st, 1873.

WARDS.	Population, 1870.	Health Rate, per 1000, by Wards.	Estimated Population, 1873.	Health Rate, per 1000, by Wards.
FIRST	6,476	28	8,046	16
SECOND	9,117	21	8,470	26
THIRD	9,981	13	10,525	12
FOURTH	12,087	19	12,575	18
FIFTH	20,190	25	20,490	25
SIXTH	28,296	33	29,532	31
SEVENTH	22,312	22	22,825	22
EIGHTH	9,592	35	12,900	26
NINTH	15,279	28	17,544	25
TENTH	34,592	22	30,330	19
ELEVENTH	21,243	23	23,298	20
TWELFTH	18,302	38	20,418	28
THIRTEENTH	18,714	21	22,116	18
FOURTEENTH	20,649	30	22,050	28
FIFTEENTH	18,406	23	17,190	25
SIXTEENTH	26,438	42	28,491	40
SEVENTEENTH	17,353	30	21,510	24
EIGHTEENTH	11,607	38	12,321	36
NINETEENTH	16,381	27	18,432	21
TWENTIETH	19,179	19	20,550	17
TWENTY FIRST	27,901	31	36,030	24
TWENTY SECOND	11,769	29	15,858	22
TOTALS	396,099	27.6	440,837	24.8

WARDS.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus Fever.	Typhoid Fever.	Cholera Infantum.	Cholera Morbus. Other Diarrhœal Diseases.	Remittent Fevers.	Other Zymotic Diseases.	Total Deaths from Zymotic Diseases.	Deaths by Accident or Negligence. (*Coroners' Inquests.*)	Total Deaths from all Causes.
FIRST	....	....	....	8	4	3	....	2	8	10	4	3	42	20	130
SECOND	2	1	5	1	8	3	....	2	22	10	4	17	75	17	223
THIRD	2	1	1	3	1	2	....	....	7	4	3	4	28	5	136
FOURTH	1	2	5	5	7	6	....	....	18	8	1	11	64	17	237
FIFTH	4	7	10	11	8	3	....	3	65	16	4	18	149	31	519
SIXTH	11	3	21	29	18	10	....	18	55	34	12	30	241	62	934
SEVENTH	9	1	24	9	10	4	....	6	39	10	5	19	136	29	509
EIGHTH	1	1	26	6	15	8	....	1	35	8	6	12	119	18	344
NINTH	3	....	19	8	11	6	....	6	43	33	6	6	141	34	443
TENTH	3	1	11	5	15	4	1	6	79	36	11	26	211	36	772
ELEVENTH	10	3	10	6	10	4	....	2	30	13	5	8	100	62	489
TWELFTH	2	7	15	23	38	7	....	2	60	20	3	18	195	54	592
THIRTEENTH	1	6	16	19	27	6	1	4	32	18	1	13	141	28	407
FOURTEENTH	1	7	8	22	27	15	....	4	66	15	6	17	188	41	629
FIFTEENTH	13	2	11	11	19	5	....	2	51	16	7	8	115	28	431
SIXTEENTH	31	16	25	23	32	17	....	7	148	45	5	10	359	44	1,155
SEVENTEENTH	2	1	14	9	11	6	1	10	75	21	8	17	175	28	526
EIGHTEENTH	8	3	15	7	9	7	....	5	57	16	7	8	142	25	446
NINETEENTH	3	5	13	7	16	5	....	7	57	23	2	11	149	21	414
TWENTIETH	5	2	22	7	5	2	....	5	20	5	6	7	86	14	365
TWENTY FIRST	6	2	25	4	24	9	....	9	110	41	9	30	277	54	886
TWENTY SECOND	....	2	18	13	10	6	....	2	35	11	9	8	114	21	351
TOTALS	118	69	324	252	325	138	3	103	1112	416	126	301	3280	692	10,968

DEATHS AT INSTITUTIONS.

Brooklyn Nursery, 21.
German Catholic Hospital, 24.
Little Sisters of the Poor, 29.
Sheltering Arms Nursery, 18.
St. Mary's Hospital, 17.
St. Peter's Hosp., 116. L. I. Coll. Hosp., 80. St. Paul's Orphan Asylum, 9.
Homœopathic Hospital, 6.
Howard Orphan Asylum, 5.
Home for Destitute Children, 14. Kings County Penitentiary, 3.
City Jail, 2.
City Hospital, 75. Naval Hospital, 4.
Savior's Home, 2.
Old Ladies' Home, 1.
Home for the Friendless, 2.
Home for Consumptives, 2.
Fourth Precinct Station House, 1.
Fifth Precinct Station House, 1.
Convent of Mercy, 1.
Homœopathic Maternity, 1.

Still Births, 1,003—Males, 579; Females, 424.

Colored Deaths, 185—Males, 86; Females, 99.

classifications. They were principally diseases of the heart and aneurism. One classification is simply heart disease (otherwise unspecified). This contains such of the Coroners' cases as were returned as heart disease without the particular lesions being specified, and therefore cannot be considered reliable.

Respiratory Diseases.—There were destroyed 1,264 lives by local affections of the respiratory organs, of which number 673 were males and 571 females. 856 were of native and 408 of foreign birth, pneumonia being the principal cause, from which there were 745 deaths. Bronchitis comes next in order of number with 243; congestion of the lungs has also a fair share, 150 being its proportion.

Diseases of Digestive System.—The diseases of the digestive organs caused 422 deaths, of which 207 were males and 215 females. The reader is referred to the mortality table for their classification and history, they being too numerous to mention and describe in a report of this kind. There were 119 deaths among children under the age of 5 years. I believe that a majority of these, in all probability, ought to be charged to zymotic causes.

Diseases of the Urinary System.—There are assigned 270 deaths to the urinary diseases, of which number 147 were males and 123 females. Bright's disease destroyed more lives than all the rest combined of this class. The number of deaths from this cause was 181; intemperance was the indirect cause of many of these deaths. Nephritis, cystitis and uremia are the other principal causes of death in this classification.

Diseases of Generative System.—There were 216 fatal cases of diseases of the generative system and it will be observed by referring to the table, that females were the only sufferers. One half of all the deaths of this class was due to ovarian diseases.

Locomotory System.—The deaths from this class were principally of the bones, which occasioned 28 deaths, one of these was the result of an amputation at the knee joint for necrosis of the part. Spina bifida and hip disease were the other principal causes.

Integumentary Diseases.—There were recorded 10 deaths in this class, the only one worthy of mention is one of elephantiasis which is the case of one Englishman aged 55 years. The time from the commencement of the disease until the death was 2 years, at which time the skin was like that of an elephant in color and firmness.

Developmental Diseases.—The deaths in the first order of developmental diseases all occur among children under 1 year. In fact they are hardly worthy of being added to the death rate from any disease, but to some one of the many freaks that nature exhibits. Very few who are born with any of the malformations of this class reach the age of 3 months. The following are the principal and most frequent causes of death, premature birth, cyanosis and arnus impervious, several of the latter being operated upon without success. There were 149 males and 116 females, making a total of 265 deaths from the different malformations of the body in infants.

Among the developmental diseases peculiar to women (amounting to 94) of which the various affections incident to parturition are classed, Puerperal fever, of which there was 37 cases, is excepted in this class, and will be found among the zymotics, it being of that character, childbirth, flooding, puerperal metritis and puerperal convulsions, being the principal causes. one death was caused by the rupture of the uterus, 44 were natives of the United States, and 50 of foreign birth.

Old Age.—This was the only cause of death assigned in 196 cases ranging from 55 to 100 years, 55 only being native of United States, 141 were of foreign birth, 2 deaths from senile gangrene, one at 50, and the other at 80 years.

Diseases of Nutrition.—Atrophy is assigned 30 deaths, most of them (26) were in children under the age of one year, and in all probability are counterparts of deaths from inanition and marasmus. Asthenia or debility is credited with 186 deaths, one-third of them may well be counted as deaths from old age. But the reverse is here noticed so far as nativity is concerned, the majority in this particular classification being natives of the United States.

Accidents and Negligence.—There were 255 deaths from various accidental causes for which the reader is referred to table following, 81 deaths were due to drowning, 74 from falls. 2 of the cases of falls were from steeples of churches. 214 were males, and 43 females. Natives and foreign population are about equally represented.

Homicide.—10 persons met their death from the hands of other individuals, one by strangulation and burns which is classified on the mortality sheet as arson, 4 from blows, 1 from pistol shot, 2 from the effects of being struck with a stone, and 1 by a sailor's knife.

Suicide.—Those who died by their own hand were 31, of which 22 were males and 9 females. Of the various methods they adopted to destroy their lives, 5 were by drowning, 5 by hanging, 4 by Paris-green, 4 by razor, 9 by pistol shot, 2 by opium, 1 from leap from height, and 1 from surgeon's cutting. Drowning, hanging and Paris-green seem to be the favorite means employed by the female portion of the suicides.

Unknown Causes—The causes of only 4 deaths cannot be accounted for; 3 of these were children under the age of 1 year, the other a man aged about 40, all of which were found dead in the streets.

Accompanying the report will be found a chart, showing the mortality by weeks. By reference to it will be found that the smallest number of deaths occurred during the week ending June 14th, and the largest July 26th; the former 148, and the latter week 399, the mean death-rate being 210.12.

The black line, crossing the chart, represents the total mortality from all causes. The purple represents the mortality occurring among children under the age of 5 years. The red ink line represents the total number of deaths caused by the zymotic diseases. The green line shows the number of deaths from diarrhœal diseases. The faint black line running through the yellow stratum, shows the number of deaths from cholera infantum. The lower line representing consumption.

Localities.—Estimates have been made of the rate of mortality in each ward, both on the basis of the census of 1870, and the population estimated by multiplying the number of registered voters in 1872 by the figures 5 and 6, employing the figure 5 for the multiplier in the wards which contain the smallest foreign population, and the figure 6 in those wards which contain a large proportion of foreign element. At these figures I have estimated the population to be 440,837.

The smallest number of deaths to the thousand in any ward occurred in the 3d, where the death-rate was only 13 to the thousand, on the basis of the census of 1870, and 12 on the basis of the estimated population. The largest was in the 16th ward, which was 43 to the thousand on the basis of the census of 1870, or 40 on the estimated population.

The Register would call attention to the fact that the number would

appear to be very large in the 6th and 11th wards. This fact is explained when we remember that in the 6th ward is situated the Long Island Hospital, St. Peter's Hospital, and St. Paul's Roman Catholic Asylum, and that the deaths in these institutions amounted to 205; while in the 11th Ward is located the City Hospital, in which there were 75 deaths during the year. In the 16th Ward was the greatest number of deaths from small pox and measles. The largest number of deaths from scarlet fever occurred in the 8th Ward. In the 6th Ward diphtheria caused the death of 29 persons. The 12th Ward having the largest death-rate from croup. 18 deaths from typhoid fever in the 6th Ward, which is more than occurred in any other two Wards. The 16th Ward had the largest number of deaths from diarrhœal diseases. Remittent fever claims the greatest number in the 10th Ward. The largest number of zymotic diseases in any of the Wards was in the 16th, where the number amounted to 359; the 21st having 277; the 6th, 241; and the 10th, 211.

Burial Permits.—There were issued from the Register's department 13,144 burial permits, and 309 permits for the disinterment of other bodies for removal to cemeteries.

Still-Births.—There were issued 1,003 permits for the burial of still-born infants, ranging from the 4th to the 9th month of fœtal life. About one-third of the certificates upon which permits were given was signed by midwives. 579 were males, and 434 females.

Colored Deaths.—185 deaths occurred among the colored population, which, according to the census of 1870, amounted to 4,944. This will give a death rate among this class of people of 37 to a thousand, or 1 death in every 26 persons.

Births.—During the year 1873, there were recorded 5,027 births. The following is the number recorded each year since the organization of the Metropolitan Board of Health, in the year 1866:

From	May	1,	1866	to	December 31	3,124
"	Jan.	1,	1867	"	" 31	5,224
"	"	1,	1868	"	" 31	4,802
"	"	1,	1869	"	" 31	5,349
"	"	1,	1870	"	" 31	4,817
"	"	1,	1871	"	" 31	4,424
"	"	1,	1872	"	" 31	4,216
"	"	1,	1873	"	" 31	5,027

Thus it will be seen that the largest number reported in any year was in 1869.

Since my connection with the Board, I have paid some attention to this branch of statistics, and during the six months ending December 31, 1873, there were 3,015 reports of births sent to the office of the Register against 2,013 which was reported during the first 6 months. I have no doubt that during the year 1874, the amount can be increased to 10,000, providing the law upon this subject be strictly enforced.

Marriages.—The reports of 2,520 marriages were recorded during the year 1873 which compares with other years as follows:

From	May	1,	to	December	31, 1866	853
"	Jan.	1,	"	"	31, 1867	1,677
"	"	1,	"	"	31, 1868	2,130
"	"	1,	"	"	31, 1869	2,161
"	"	1,	"	"	31, 1870	2,367

From	Jan.	1,	to	December	31, 1871	2,447
"	"	1,	"	"	31, 1872	2,561
"	"	1,	"	"	31, 1873	2,520

Thus it will be seen that the number reported in the year 1873 was only 41 less than the year 1872. Were it not that the number reported during the last 6 months is considerably over that of the first six months of the year, the number for 1873 would fall short by a large number of those reported during the year 1872.

In conclusion I feel that a brief summary would not be amiss, and hence, make it as general as possible, by stating that there were 10,968 deaths, 5,539 of which occurred among children under the age of 5 years.

There were reported 5,027 births, and 2,520 marriages, 1,003 still births, 185 deaths among the colored population.

The death rate to one thousand on the basis of the United States census of 1870 is 27.6 and on the estimated population (435,314) 25.1.

The largest death rate to the thousand in any Ward occurred in the 16th, and the smallest in the 3d.

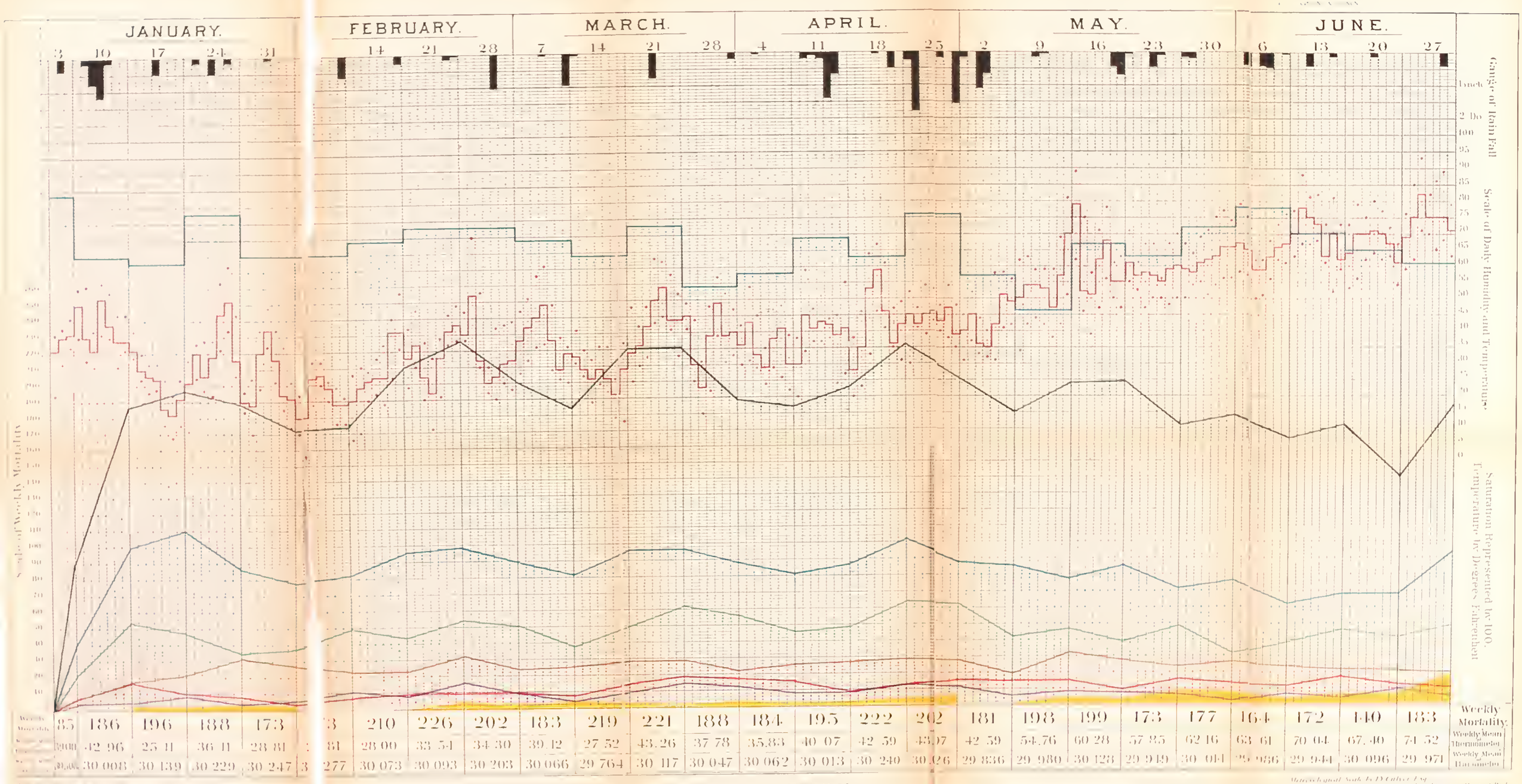
All of which is respectfully submitted,

JAMES WATT, M. D.,
Register

CHART

Illustrating the Actual Weekly Mortality during the Six Months ending June 30th. 1874.

With the Meteorological Observations for the same Period.



Weekly Mortality	185	186	196	188	173	3	210	226	202	183	219	221	188	184	195	222	202	181	198	199	173	177	164	172	140	183
Weekly Mean Thermometer	42 96	30 008	25 11	30 139	36 11	30 229	28 81	30 247	81	28 00	33 54	34 30	39 12	27 52	43 26	37 78	35 83	40 07	42 59	43 07	42 59	54 76	60 28	57 85	62 16	63 61	70 04	67 40	74 52
Weekly Mean Barometer	30	277	30 073	30 093	30 203	30 066	29 764	30 117	30 047	30 062	30 013	30 240	30 026	29 836	29 980	30 128	29 949	30 014	29 986	29 944	30 096	29 971				

Weekly Mortality

Weekly Mean Thermometer

Weekly Mean Barometer

Watercolour Scale by D Cubitt Esq
Chief Engineer Metropolitan Board

EXPLANATION.

TOTAL MORTALITY FROM ALL CAUSES — CHILDREN UNDER 5 YEARS — ZYMOTIC CAUSES — CONSUMPTION — SCARLET FEVER — DIPHTHERIA — DIARRHŒAL

The irregular red line across the Chart indicates Daily Mean Temperature — The red points at ends of perpendicular bars indicate Daily Extremes of Temperature — The irregular blue line indicates the Weekly Mean Humidity

RAIN FALL

HEALTH DEPARTMENT, CITY OF BROOKLYN
OFFICE OF THE REGISTER OF RECORDS,
March 4th, 1875.

E. L. LANGFORD, *Secretary.*

SIR: I herewith submit the annual report and review of the vital statistics of this city for the year ending December 31st, 1874. The last census, that of 1870, found the population of the city to be 396,000. The increase of population during the decade from 1860 to 1870, amounts to an average of 13,000 per annum, and from that enumeration, as a basis, an estimate of the present population must be made. The yearly increase is believed by those competent to judge, to lie between three and four per cent. per annum. In the decade ending with 1870, that is from census to census, the yearly growth was in reality a little more than four percentum, by actual computation; but inasmuch as some of the years during that period were marked by unusual accessions, it is not proper to assume so high a ratio of increase since 1870. To avoid all charge of over estimation, the annual rate of growth is placed at about three percentum, and from that we obtain 450,000 as the population of 1874. Those interested in the subject will soon have an opportunity to verify this estimate by a comparison with the census to be made by the State authorities during the present year.

The total number of deaths during the year 1874, was 11,011, a weekly average of 212. Estimating the population at 450,000, as above, the death rate in each thousand inhabitants was 24.46. The accompanying table enables a comparison of the mortality for the past five years:

	Population.	Deaths.	Death Rate per 1,000.
1870,.....	396,000	9,546	24.10
1871, ...	410,000	10,259	25.02
1872,.....	493,000	12,648	30.00
1873,.....	436,000	10,968	25.13
1874,.....	450,000	11,011	24.46

From this it will be seen that we have had as low a death rate during the year as has occurred during the past five years. The following is the ratio of mortality in the principal cities in the United States. (With the exception of Baltimore, Washington and Jersey City, the data relate to the full year 1874):

TABLE OF DEATH RATES IN AMERICAN CITIES DURING 1874.

Cities.	Estimated Pop.	Total No. Deaths.	Death Rate per 1,000.
New York,	1,040,000	28,727	27.62
Philadelphia, Pa.	775,000	15,238	19.66
Brooklyn, N. Y.,	450,000	11,011	24.46
St. Louis, Mo.,	450,000	6,506	14.45
Chicago, Ill.,	395,000	8,025	20.29
Boston, Mass.,	375,000	7,812	20.83
Baltimore, Md.	350,000	7,401	21.14
Cincinnati, Ohio,	260,000	5,321	20.46
San Francisco, Cal.	210,000		
New Orleans, La.	207,000	6,798	32.76
District of Columbia.	150,000	2,959	19.72
Cleveland, Ohio,	145,000	2,195	15.13
Pittsburg Pa.	137,000	3,381	24.63
*Jersey City, N. J.	120,000	1,436	23.97
Milwaukee, Wis.	100,000	1,909	19.09
Providence, R. I.	99,008	1,983	19.90
Albany, N. Y.	95,000	1,786	18.80
Rochester, N. Y.	80,000	1,405	17.56
Richmond, Va.	65,000	1,591	24.47
New Haven, Conn.	50,000	1,073	17.85
Troy, N. Y.	50,000	1,450	20.00
Charleston, S. C.	50,000	1,948	38.96
Memphis Tenn.	50,000	1,148	22.96
Hartford, Conn.	45,000	588	10.86
Fall River, Mass	43,000	1,177	27.21
Paterson, N J.	40,000	862	22.30
Yonkers, N. Y.	30,000	323	18.35
Evansville, Ind.	35,000	629	18.00
Dayton, Ohio,	34,000	479	14.00
Galveston, Texas,	34,000	626	18.41
Quincy, Ill.	30,000	555	18.50
Peoria, Ill.	30,000	338	11.16
Salem, Mass.	26,000	496	19.07
Lansing, Mich.	7,445	60	9.16

It will be remarked that our rate of mortality is much higher than in many of the smaller cities, and the difference can only be explained upon the supposition that in many of them the figures are incomplete and the registration faulty. Even in some of the largest cities of this country, there is an absence of a thorough system of mortality registration, such as exists in New York and Brooklyn. It might almost be said of some of them, that their mortality is estimated as well as their population. The corrective of returns like some of those in the foregoing table is found in the very generally accepted deductions of statisticians, to the effect that the least preventable mortality in a large modern city, is to be rated at about 17, and that of a rural district at 11 per thousand.

The report contains a chart on which is shown the mortality by weeks; also the state of the weather during the same period. The mortality lines were drawn by the Registrar, and the weather lines were furnished by J.

* Last six months of the year 1874.

Y. Culyer, Esq., Chief Engineer at Prospect Park; and I here take occasion to thank him for the same, as they are a valuable contribution to our report. It will be found that the lowest mortality occurred in the week ending June 20, during which time the weekly mean of the thermometer was 67.40 degrees. The greatest mortality occurred during the week ending Saturday July 18, with a weekly mean temperature of 76.35 degrees. It will also be observed that as the temperature falls below 40 degrees the death-rate increases, and again as it rises above 66 degrees the increase is marked. Between those two points, 40 degrees and 65 degrees, we have our most healthful seasons in this climate.

MORTALITY FOR THE PAST THREE YEARS BY QUARTERS.

	1872.	1873.	1874.
First Quarter	3,025	2,459	2,528
Second Quarter	3,324	2,319	2,590
Third Quarter	3,343	3,692	3,473
Fourth Quarter	2,456	2,498	2,611
Totals	12,648	10,968	11,011

Mortality among children under the age of five years.—The total number of deaths among children under the age of 1 year, was 3,170, which is 2,878 per cent. of all deaths, while the grand total of deaths occurring under the age of five years was 5,650, which is over 51 per cent. of the mortality for the year. In the city of New York the percentage of deaths of children under this age was 47 per cent.; this may be explained by the fact that there are not as many children in that city in proportion to the population, as there is in the city of Brooklyn; also the mortality among the immigrants, chiefly over the age of 5 years in New York is an important factor.

Deaths among children for two years.—Under one year, in 1873, 3,286 in 1874, 3,170; difference in favor of 1874, 116. Under five years, in 1873, 5,539; in 1874, 5,650; difference in favor of 1873, 111—this in a measure being due to the large death-rate from scarlatina and diphtheria, as will be seen below.

Nativity.—Twenty-six per cent. of the mortality occurred among the foreign born population, and it is fair to presume that 25 per cent. was among adults. This leaves only 24 per cent. of our death roll among those of native birth over the age of 5 years. Of foreign countries, Ireland contributes most largely to this year's death roll; Germany next; England next; Ireland gives fully double that of England.

SEX AND NATIVITY OF TWO YEARS MORTALITY.

	1873.	1874.
Native Males	4,190	4,163
Native Females	3,797	3,941
Foreign Males	1,490	1,473
Foreign females	1,491	1,434
Totals	10,968	11,011

OBSERVATIONS ON THE PRINCIPAL CAUSES OF DEATH.

Small-pox.—Small-pox is credited with only 53 deaths during the year, more than one half of which occurred during the last quarter. This is a very small number, as compared with that which marked 1872, when an epidemic prevailed, which destroyed the lives of 737 persons within the limits of this city, and 119 more who were removed from the city to County Hospital at Flatbush. In the following year (1873) 118 deaths were charged to this cause. It is a remarkable fact that only 7 of the 53 deaths occurred west of Bedford Avenue. Below will be found a table showing the number of deaths from this disease to each ward, during the past five years, with the exception of 1870, for which the records of only the last eight months are tabulated:

TABLE OF SMALL POX BY WARDS FOR 5 YEARS.

Wards.	1870.	1871.	1872.	1873.	1874.
1	..	1	2	..	..
2	..	15	14	2	1
3	1	1	1	2	..
4	..	2	5	1	1
5	2	6	19	4	..
6	..	6	28	11	..
7	1	7	15	9	1
8	..	9	18	1	..
9	2	10	17	3	3
10	..	13	24	3	1
11	6	15	31	10	..
12	1	46	11	2	..
13	..	3	7	1	4
14	3	4	7	1	11
15	5	18	47	13	4
16	51	121	292	31	14
17	3	11	9	2	5
18	6	21	39	8	4
19	7	21	59	3	..
20	..	5	10	5	..
21	9	22	46	6	4
22	..	6	36	..	2
Totals	97	373	737	113	53

Measles.—The number of deaths due to measles was 90, a large proportion being among children under the age of five years. This disease itself does not destroy so many lives as do the complications that are liable to arise during its progress, such as bronchitis and pneumonia. Many of the certificates of death from this cause have as the immediate cause of death one or the other of the above.

Scarlatina.—This is one of the diseases of childhood which has prevailed to a much greater extent this year than the last. The number of deaths assigned to this cause was 479. This is 165 more than occurred during the previous year.

Diphtheria.—The zymotic disease that exhibited the greatest activity

TABLE IV.

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES,

REGISTERED FOR THE TWELVE MONTHS ENDING DECEMBER 31st, 1874.

| CAUSES OF DEATH. | NATIVITY. U. States | | Foreign. | | Colored. | | Under 1 year. | | 1 | | 2 | | 3 | | 4 | | Total under 5 years. | | 5 | | 10 | | 15 | | 20 | | 25 | | 30 | | 35 | | 40 | | 45 | | 50 | | 55 | | 60 | | 65 | | 70 | | 75 | | 80 | | 85 | | 90 | | 95 | | 100 and up. | Total by Sexes. | | Total both Sexes. |
|---|---|---

TABLE IV.—(*Continued.*)

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES,

REGISTERED FOR THE TWELVE MONTHS ENDING DECEMBER 31st, 1874.

CAUSES OF DEATH	NATIVITY. U. States		Foreign		Colored		Under 1 year		1		2		3		4		Total under 5 years.		5		10		15		20		25		30		35		40		45		50		55		60		65		70		75		80		85		90		95		100 and up.		Total by Sexes.		Total both Sexes.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
CLASS II.—CONSTITUTIONAL																																																										
Order 1.—*Diathetic.*																																																										
Cancer of Axilla		2		1																									1							1																		3		3	
" " Back	1																																																						1		1	
" " Breast		10		15																					1		2		1		2		5			5		3		2		2		2										25		25	
" " Eye	1		2																		1															1						1												3		3	
" " Face		3	3																								1												1				1										3	3	6	
" " Intestines		1	2	2																													2			1	1				1												2	3	5	
" " Jaw			1	1																									1						1																		1	1	2	
" " Kidneys		1																															1																					1	1	
" " Leg	1																																											1										1		1	
" " Liver	2	3	1	6																	1		1		1		1						1	1		1		1	1	1		2										3	9	12	
" " Lungs	1																																1																				1		1	
" " Lip	1		1	1																													1						1												2	1	3	
" " Lymphatics				1																									1																									1	1	
" " Mesentery				1																															1																			1	1	
" " Neck	1		1	1																									1										1												2	1	3	
" " Oesophagus				1																																																		1	1	
" " Ovary		1		1																																	1		1													2	2	
" " Rectum		2	1	5																											1				1				1				1		1		2						1	7	8	
" " Shoulder			1	1																			1																																1	1	2	
" " Stomach	15	6	23	8			1										1												2	1			5	1	9	2	5	1	5	2	5	1	4	3	1	2	2		1				38	14	52	
" " Throat	1																										1																											1		1	
" " Thigh	1	1	1																								1									1																2	1	3	
" " Tongue			2																																				1	1													2		2	
" " Uterus		22		35		1																			1		1		1		10		11		9		11		3		4		2			1							57	57	
" " Vagina		1																																	1																			1	1	
Cancrum Oris (Noma)		2								1				1				2																																							2	2	
Rheumatism	12	13	11	9															1	3	1	2	2			1	4		1		1	2	2		2	1	1	1	1	5	1	1	1	2	1	1	1	3					23	22	45	
Total Diathetic Diseases	37	68	50	89		2		1				1					2	4	2	2	2	4		1	2	4	5	4	4	2	9	4	12	10	24	10	14	10	29	9	15	7	15	6	9	6	9	3	4	2				87	157	244	
Order 2.—*Tubercular.*																																																										
Scrofula	13	14	1	1					2	4		2	1				1	1	11	11			1		1	2	1				1									1														14	15	29	
Psoas Abscess	1	1	1																				1	1									1																						2	1	3	
Tabes Mesenterica	918	190	6	6	6	3	151	147	15	50	13	3	2	3		1	913	188	1	1									1						2		1		1	2	1	1	1		1	3							224	196	420	
Phthisis Pulmonalis	247	322	527	511	19	19		6	6	7	1		4	4	3	3	33	20	2	6	2	6	15	28	66	87	87	103	94	102	76	68	52	61	34	49	53	47	34	25	20	27	24	15	10	9	9	4	5		1	2			604	663	1267	
Hydrocephalus	121	91	1	2		1	31	7	22	27	12	11	9	1	6		115	80	3	3	2						1											1																122	94	216	
Tubercular Meningitis	55	52		3	2	3	14	16	17	11	3	6	8	1	2	5	46	47	3	3	1	4	1		1	1	1											1																53	55	108	
Total Tubercular Diseases	683	670	536	551	2	25	242	205	101	96	36	23	17	10	12	10	408	356	1	13	6	11	19	30	68	88	89	103	94	102	76	69	53	61	34	49	55	49	35	25	21	31	25	16	11	9	10	7	5	1	1	2			1019	1024	2043	

TABLE IV.—(*Continued.*)

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES.

REGISTERED FOR THE TWELVE MONTHS ENDING DECEMBER 31ST, 1874.

CAUSES OF DEATH.	NATIVITY				Colored		Under 1 year.		1		2		3		4		Total under 5 yrs.		5		10		15		20		25		30		35		40		45		50		55		60		65		70		75		80		85		90		95		100 and up.		Total by Sexes.		Total both Sexes.
	U. States		Foreign.																																																					
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
CLASS III —LOCAL.																																																					
Order 1.— *Nervous System.*																																																							
Meningitis	7	55	4	5	2	1	21	22	15	10	11	7	9	3	4	2	63	44	6	4	3	3	1	1	1	1	5			1	2		1	1						2		1												81	58	139
Encephalitis	22	19	9	1	1		5	2	6		3	5	3	1	1		18	14	4	3			1				3		1	3	1	1	1							1	1		1												31	20	51
Softening of Brain	15	9	17	5																					2			1		4		2		8	2	3		3	5	2	2	2	4	4		1								32	14	46
Apoplexy	33	51	84	4	2	2																	1	1		1	7	2	3	2	5	3	6	1	13	10	13	9	16	10	9	11	19	15	7	10	9	8	4	12	4		1	2				117	99	216
Insanity	1	1	1	2																					1	1							1	1							1													2	3	5
Epilepsy	7	5	4	5																	1		2		1	2	1	2		1	1				1	1	2	4			1			1											11	10	21
Convulsions	235	209	1	3	6	6	142	141	32	34	13	11	4	7	2	7	233	205	2	3	1	3														1	1																		236	212	448
Paralysis (General)	11	14	10	10		1		1										1	1					1			1		2				1	2	2	1	3	1	3	2	1	2	2	5	4	5	1	1		2					21	24	45
Paraplegia		3	2	3																							1				1				1						2			1		2		1					3	6	9
Hemiplegia	5	5	7	4	1																								1	1	1	1	1				2			1	1	3	2	3	2		2						12	9	21
Spinal Apoplexy			1																																1																		1		1
Locomotor Ataxia			2																																1						1											2		2
Chorea		1																				1																																	1	1
Tetanus	2	1	3	2										1				1			1		1			1			1					1		1	1																	5	3	8
Trismus Nascentium	18	20					18	20									18	20																																				18	20	38
Cerebral Anæmia		1																											1																									1	1
" Abscess	1																												1																									1		1
Insolation	4	1	4												1	1	1	1							1						1				1		1																	5	1	6
Congestion of Brain	72	72	42	16	1		25	20	18	12	10	7	4	2	2	3	59	54	2	7	1	3	1	3	2	4	1		3	5	2	1	3		1	1	3	1	1		1	1	1		1										84	88	172
Total Nervous Diseases	590	465	162	101	13	11	254	216	74	59	57	33	20	14	10	13	392	335	15	17	7	10	4	8	8	9	17	3	13	9	14	10	18	6	21	17	30	18	28	12	16	25	28	26	18	25	20	17	9	14	4	2	2	2	662	569	1231
Order 2. *Circulatory System.*																																																							
Pericarditis	13	11	7	12										1	1	3	1	3	1	1	2	1	3	1	3	1	1		1	1	2		1	2	3	1	1	3	1	1		1		2	1			1		1								20	23	43
Endocarditis	6	11	7	1				1							1	1	1		2		3	1			1				3	1		1	2	1	3		1			1	1		1		1										13	12	25
Aneurism of Aorta	6	1	3		1																						2		1		3		4		1		1				1												9	1	10
" " Heart	1	2	1																		1						1																												2	2	4
" " Pulmonary			1																																					1													1		1
Hypertrophy of Heart	6	16	7	11	1	2															1		1		1	3	1		3	1	1	2	1	2	2		3		4	1	4	2	3		4		2								13	30	43
Valvular Disease of Heart	46	46	54	55				1							1		5	2	3	5	4	3	5	5	5	10	7	10	6	9	9	6	5	2	5	6	6	7	9	6	10	11	7	5	8	7	5	2	2	2	2				100	101	201
Fatty Degeneration of Heart	1	7	3	5																							1	1			1		1				1								1	2							4	12	16
Syncope	1	1		1																	1														1																		1	2	3
Disease of Heart	3	8	15	12		1									1			1					1	1	1	2			1				3	1		2	1	3	1		1	2	1	2		4	3	1	2		2		4			18	19	37
Angina Pectoris	2	1	3																																1				1		2				1			1						5	1	6
Embolism		1																							1																													1	1
Thrombus			1																						1																													1		1
Epistaxis			1																										1																								1		1
Varicose Veins		1		2																										2		1																				3	3
Heart Clot	1		1																														1																				2		2
Total Circulatory Diseases	86	106	101	101	3	3		1		1		1	3	1	4		3	8	5	4	6	10	5	11	9	11	15	14	15	9	19	15	10	13	10	12	16	9	17	16	10	18	18	15	13	14	12	16	3	7	3	5		1			490	207	397

TABLE IV.—(*Continued.*)

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES,

REGISTERED FOR THE TWELVE MONTHS ENDING DECEMBER 31st, 1874.

CAUSES OF DEATH.	NATIVITY		Colored.	Under 1 year.		1		2		3		4		Total under 5 years.		5		10		15		20		25		30		35		40		45		50		55		60		65		70		75		80		85		90		95		100 and up.		Total by Sexes.		Total both Sexes.
	U States.	Foreign.																																																		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
CLASS III.—LOCAL.																																																		
Order 3.—*Respiratory System.*																																																		
Laryngitis	13	6	1	1			5	3	2	2	2	1	1		2	1	12	7	2																																14	7	21
Bronchitis	113	108	30	31	5	1	56	68	22	16	4	4	4	3		4	106	95	5	2					1	2		2			2	2	1	2	2		4	3	5	5	5	3	6		3	5	4			3	1		2			143	142	285
Pneumonia	275	247	129	95	9	11	95	66	51	56	27	21	10	10	9	4	190	157	17	12	5	8	7	5	9	5	13	12	11	11	15	15	13	18	24	11	16	11	18	13	21	16	16	11	12	17	6	9	2	6	1	2	1	2			402	342	744
Pleuritis	6	1	3	11									1	1			1	1			1	1					1	2			1	1	1	2	1	2			1	1					1								9	15	24
" Hydrothorax	3	1	6	5							1		1		1		3										1				1				1	1	2	2			1	1			1								9	16	15
" Empyema	1			1									1				1																				1															1	1	2
Gangrene of Lungs	1		1																																																	2		2
Abscess "	2	3	3	1									1				1				1				1	2		1							2				1														5	4	9
Congestion "	53	38	8	15	1		2	21	9	3	4	4	1	5			42	33	2		1		1		1	1		1		2	1	2	2	3	2		2	2	2	2	1		1	3	2	1	1	2			1				61	53	111
Oedema "		1	1	1				1										1																																			1	2	3
Hemorrhage "	6	5	12	5		1						1						1					1	1	1		2	2	5	2	1	1	1		4		3	1		1	2	1											18	10	28
Paralysis "	1																																																			1		1
Pharyngeal Abscess	2	1					2	1									2	1																																			2	1	3
Laryngismus Stridulus	1	5					1	1									1	4		1																																	4	5	9
Ulceration of Trachea			1																																																1		1
Emphysema (Asthma)	1	2	12	9	1																										1		4		2	2		1	3	2	1	2	2		1	4	2						16	11	27
Total Respiratory System	482	421	207	178	16	13	208	161	81	77	38	31	19	20	12	9	361	301	24	15	7	10	8	5	11	9	18	13	18	15	23	23	20	28	36	17	28	27	28	23	35	28	27	25	23	22	15	19	4	8	1	10	1	1			689	599	1288
Order 4.—*Digestive System.*																																																		
Gastritis	9	7	11	10			7		1		1						9			1							3	3	1	3	2	1		2	1	2	1	2	1	1		2	2	1										30	17	37
Enteritis	28	26	3	7			21	6	3	1		1		1	1	1	2	33	1	2		2			2		1		1		1	2	2		1		1			1	1	2	2	1		2				1				31	33	64
Gastro Enteritis	26	29	5	5		1	19	13	4	5		3	1				1	95		1	1				1	1			1	1								1														31	34	65
Peritonitis	19	11	11	11	1		7	1		2					1		8	2		1	1	1	2	1	6	5	1	2	2	3	2	1	4		1		5		1	1	1		2		1								33	22	55
Ulceration of Intestines		3						2										2												1																								3	3
" " Oesophagus		1						1										1																																			1	1
Ulcer of the Stomach	1	1	3	2																		1					1					1	1				1		1	1													4	3	7
Stricture of Intestines			1																																1																	1		1
" " Oesophagus			1	3																																		2			1				1							1	3	4
Stomatitis	16	7					12	6	2	1			1				15	7				1																																16	7	23
Dentition	83	53			1		5	33	22	17	3	1					8	55																																		83	53	136
Hernia	2	5	4	8			2	2									3	2									1	1				1	1	1		1		1		1											6	13	19
Intussusception of Intestines	4	3	3	1			1	2	1								8	6		1			1	1			2						1																		7	4	11
Colic (Bilious)	1	1		1													1	1														1			1																1	5	6
" (Lead)			5																								1							5		1															5		5
Fatty Degeneration of Liver	1		2	1																							1		1		1	1																			3	1	4
Cirrhosis of Liver	11	1	23	19																							1		4	1	7	1	5	6	5	2	6	8	1	1	8	3	2								36	23	59
Hepatitis	5	8	14	22		2														1		2		1		1	5		1	1	3	2	3	3	3	2	5	2	6	3		2	1		1	1	1						19	31	50
Jaundice	8	1	2	2			5	2		2						1		1		1											1	1						1		1											10	6	16
Hepatic Abscess	2		3	1																					1	1											1		1													4	1	5
Abdominal Tumors	1		2																	1																	1					1										3		3
Leucocythemia	1		1																			1																														2		2
Typhlitis	1														1		1																																			1		1
Hemorrhoids			1																														1																	1		1
Habitual Use of Opium		1																											1																								1	1
Hemorrhage of Bowels	1	3							1								1				1	1	1	1					1											1												4	3	7
Total Digestive System	226	168	96	96	1	4	129	71	35	31	4	5	2	1	3	1	17	112	1	5	5	7	3	6	4	10	8	4	11	14	12	10	16	17	9	16	16	10	18	20	8	14	18	9	12	5	4	5	1		2				322	264	586

TABLE IV.—*(Continued.)*

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES,

REGISTERED FOR THE TWELVE MONTHS ENDING DECEMBER 31st, 1874.

CAUSES OF DEATH.	NATIVITY. U. States.		Foreign.		Colored.		Under 1 year.		1		2		3		4		Total under 5 years.		5		10		15		20		25		30		35		40		45		50		55		60		65		70		75		80		85		90		95		100 and up.		Total by Sexes.		Total both Sexes.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
CLASS III.—LOCAL.																																																						
Order 5.—*Urinary System.*																																																							
Abscess of Kidneys	2	1	2																						2		1						1	1																		4	1	5
Nephritis	20	12	3	3				1		2	1	2	1	3	2	2	1	10	5	6	4	1					1		1	1		3																		23	15	38
Nephria (Bright's Disease)	40	32	70	48	1	2							1			1	1	1		1		5	2	4	5	5	1	4	6	8	10	13	15	15	10	14	9	10	7	12	4	7	7	6	3	5									110	80	190
Uremia	11	6	9	11			1	1			1		3				1	5	2		1	1	1		1	1		2		2		2	2			2	1	2	2	1		1	2	2		2								20	17	37
Diabetes	3	3	4	1																			1			1		2		1		1		1	1				1														7	4	11
Calculus	1																																																					1		1
Cystitis	9	1	12	3	1					2		1						3						1				1	3	1					1			3		2		2		3	1	2	1	1						21	4	25
Prostatitis	1																																																				1		1
Hematuria			1																																						1												1		1
Abscess of Urethra			1																																1																	1		1
Stricture of Urethra	1																										1																									1		1
Total Urinary Diseases	88	55	101	67	2	2	2	1	4	1	4	1	7	2	2	3	19	8	6	4	3	1	7	2	6	7	8	3	8	8	10	14	19	21	16	12	20	11	12	11	16	4	12	9	12	5	12	1	2	1	1				189	122	311
Order 6.—*Generative System.*																																																						
Ovarian Tumor		3		5																							1				1		3		1			1					1								8	8
Metritis (not Puerperal)		3																						1			1				1																				3	3
Metro Peritonitis (not Puerperal)				1																							1																									1	1
Uterine Hemorrhage				2																										1				1																	2	2
" Tumors		5		1																										1				1			3		1												6	6
Pelvic Hæmatocele				1																										1																					1	1
" Cellulitis				1																							1																									1	1
Vaginal Abscess		1								1																																										1	1
Total Generative Diseases		12		11				1										1						1				4		3		2		5		4		1		1		1								23	23
Order 7.—*Locomotory System.*																																																					
Spina Bifida	3	5						3	4		1							3	5																																			3	5	8
Spinal Disease	2	2	1	1											1		1		2	2										1								1															3	3	6
Hip-Joint Disease	1	4		1																	2	1		1			1		1																								1	5	6
Caries of Knee Joint			1																																																	1		1
Osteo-Myelitis	1														1		1																																				1		1
Caries of the Spine	1	1																	1	1																																	1	1	2
Total Locomotory Diseases	8	12	2	2				3	4		1				1	1	4	7	3	3	1		1				1		1	1								1															10	14	24
Order 8.—*Integumentary System.*																																																					
Abscess (Phlegmon)	3	3	1	1				2	1						1		1	2	3																		1		1													4	4	8
Carbuncle	1		1					1									1														1																				2		2
Paronychia	1																																						1													1		1
Eczema (Capitis)		1						1									1																																				1	1
Total Integumentary Diseases	5	4	2	1				3	2						1	3	4														1				1	1		1				1								7	5	12

TABLE IV.—(*Continued.*)

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES,

REGISTERED FOR THE TWELVE MONTHS ENDING DECEMBER 31st, 1874.

CAUSES OF DEATH.	NATIVITY. U. States		Foreign.		Colored.		Under 1 year.		1		2		3		4		Total under 5 years.		5		10		15		20		25		30		35		40		45		50		55		60		65		70		75		80		85		90		95		100 and up.		Total by Sexes.		Total both Sexes.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
CLASS IV.—DEVELOPMENTAL.																																																																
Order 1.—*Children.*																																																																				
Premature Birth	111	76			1		111	76									111	76																																																						
Preternatural Birth	8	2					8	2									8	2																																																						
Cyanosis	38	27			1		38	27									38	27																																																						
Atresia Ani	7	6					7	6									7	6																																																						
Atulectasis Pulmonum	11	1					11	1									11	1																																																						
Umbilical Hemorrhage		2						2										2																																																				
Total Devel. Dis. of Children	175	114			2		175	114									175	114																																																			
Order 2.—*Women*																																																																			
Childbirth		11		14		1																		3		4		5		8		4		1																																		
Flooding		5		18																				1		3		6		7		6																																		
Puerperal Metritis		20		31																			2	2		14		14		13		4		2																																
" Convulsions		8		19																			2	2		10		7		3		3																																
" Mania		1		2																						2		1																																						
Rupture of Uterus				4																								1		1		1		1																																
Extra Uterine Pregnancy		1																												1																																		
Abortion				1																												1																																
Inversion of Uterus				2																						1		1																																						
Total Diseases of Women		46		91		1																	4	8		34		35		33		19		4																																
Order 3.—*Age.*																																																														
Old Age	40	80	65	118	1	4																																					4	7	17	19	27	49	26	57	19	42	6	12	5	5	1	6	105	198	303
Senile Gangrene			1	3																																						1		1	1	1														1	3	4
Total Diseases of Age	40	80	66	121	1	4																																			4	8	17	20	28	50	26	57	19	42	6	12	5	5	1	6	106	201	307
Order 4.—*Nutrition.*																																																																
Atrophy	4	3		2			3	2	1			2					4	4																																																
Asthenia (Debility)	51	38	21	15			52	27	3	2	2				1	1	58	30	2	1								2		1	1		2		2	1	2	4	2	3	1	5		2	2	3			1								72	53	125
Total Diseases of Nutrition	55	41	21	17			55	29	4	2	2	2			1	1	62	34	2	1								2		1	1	1	2		2	1	2	4	2	3	1	5		2	2	3			1								76	58	134

TABLE IV.—(*Continued.*)

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES.

REGISTERED FOR THE TWELVE MONTHS ENDING DECEMBER 31ST, 1874.

CAUSES OF DEATH.	NATIVITY. U. States. M.	U. States. F.	Foreign. M.	Foreign. F.	Colored. M	Colored. F	Under 1 year M	Under 1 year F	1 M	1 F	2 M	2 F	3 M	3 F	4 M	4 F	Total under 5 yrs. M	Total under 5 yrs. F	5 M	5 F	10 M	10 F	15 M	15 F	20 M	20 F	25 M	25 F	30 M	30 F	35 M	35 F	40 M	40 F	45 M	45 F	50 M	50 F	55 M	55 F	60 M	60 F	65 M	65 F	70 M	70 F	75 M	75 F	80 M	80 F	85 M	85 F	90 M	90 F	95 M	95 F	100 and up. M	100 and up. F	Total by Sexes. M	Total by Sexes. F	Total both Sexes.
CLASS V.—DEATHS BY VIOLENCE.																																																														
Order 1.—*Accident & Negligence.*																																																													
Fractures and Contusions	6	2	4						1		1						2		2		1				1				1		2					1	1			1																				10	2	12
Wounds	7	5	8	1								1					1			1	1		2			1	1	1		3	1			4		2																								15	3	18
Killed by Vehicles	9	4	13						1	1	1	2	1				3	3	1		2	1	1		2				1		1				3		3				3		1		1														22	4	26
Pistol-Shot Wounds	2		3																1				1		1																2																				5		5
Falls	25		28	6					2				3		2		7		2		3		3		2		6		3	1	2		4		4	1	4		4	2	2	1	2		1	1	2		1								53	6	59
Burns	7	9	3	4						1	1			3	1		2	4	2	1	1	1				2	1	2	1	1		2										1		1														10	13	23
Scalds	8	5	1						3	2	1	3	2		1		7	5	1																																									9	5	14
Poisons	4	1		1			1		1								2														1	1	1			1																							4	2	6
Fall of Building	2		1																										2								1																					3		3
Swallowing Foreign Bodies	2								1								1		1																																									2		2
Bite of a Hog			1																																								1																1		1
Asphyxia	3	1	2				2	1									2	1							1		2								1																								5	1	6
Drowning	14	3	50	2			1	1							1		2	1	4		5		5		4		2		8		17	3	8	1	4		2		1		2																64	5	69
Total by Accident and Neg.	89	27	114	11			4	2	9	4	1	5	7	3	5		29	14	14	2	13	2	12		11	2	11	3	17	2	26	7	13	1	15	1	11	1	10	3	7	1	6	1	3	1	2		1						203	11	244
Order 2.—*Homicide.*																																																												
Homicide by Cooper's Adze	2	1									1				1		2		1																																									2	1	3
" " Blows	2		2	1			1										1								1				2		1																										4	1	5
" " Knife	1		3	1																					2		1					1	1																										4	1	5
" " Pistol Shot	1		3		1																						1				1		1						1																				4		4
" " Scissors	1																										1																																1		1
Total Homicidal Deaths	7	1	8	2	1		1				1				1		3		1						2		4				3		2	2					1																				15	3	18
Order 3.—*Suicide.*																																																												
Suicide by Arsenic			3																																2		1																				3		3
" " Leap from Height			1																														1																										1		1
" " Opium	3		4																						1		1		1				4																										7		7
" " Pistol shot	2	1	4																									1	1		2		2										1																6	1	7
" " Razor		1	4	1																							1			2					1		1						1																4	2	6
" " Stab Wounds	1																																1																										1		1
" " Hanging			8	1																					1		1		1				1	1	1				2				1																8	1	9
Total Suicidal Deaths	6	2	24	2																					2		3	1	3	2	2		9	1	4		1		3		1		2																30	4	34
Order 4.—*Sudden Deaths and Cause Unascertained.*																																																												
Unknown Causes	3	1	1				3	1									3	1																	1																								4	1	5
Total Unknown Causes	3	1	1				3	1									3	1																	1																								4	1	5
Totals from all Causes	4163	3941	1473	1434	80	67	1717	1453	614	571	303	274	214	191	154	137	3020	2630	256	244	106	126	78	89	140	174	192	211	206	232	213	220	189	208	182	172	208	151	182	156	137	161	160	149	130	122	117	141	54	100	38	66	11	22	6	5	1	6	5636	5375	11,011

TABLE V.

DEATHS FROM ZYMOTIC DISEASES IN BROOKLYN.

DEATHS FROM SMALL-POX, MEASLES, SCARLATINA, DIPHTHERIA, WHOOPING-COUGH, TYPHOID FEVER, TYPHUS FEVER, CHOLERA INFANTUM, DIARRHŒAL MALADIES, AND OTHER ZYMOTIC DISEASES.

REGISTERED DURING THE YEAR ENDING DECEMBER 31st, 1874.

WARDS.	Estimated Population, 1874.	Health Rate, per 1000, by Wards.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus Fever.	Typhoid Fever.	Cholera Infantum.	Cholera Morbus, Other Diarrhœal Diseases.	Remittent Fevers.	Other Zymotic Diseases.	Total Deaths from Zymotic Diseases.	Deaths by Accident or Negligence. (*Coroners' Inquests.*)	Total Deaths from all Causes.
FIRST	17,500	17	....	2	3	2	9	6	....	2	20	14	2	11	97	11	303
SECOND	9,000	28	1	1	16	1	15	3	....	2	14	4	....	16	88	9	256
THIRD	18,000	20	....	3	13	32	13	5	....	3	23	15	7	28	142	5	367
FOURTH	13,000	20	1	1	12	1	8	....	....	....	22	13	1	13	83	5	267
FIFTH	20,000	24	....	2	36	1	9	3	....	3	35	12	....	26	137	18	496
SIXTH	30,000	32	....	9	22	13	28	12	1	15	67	25	12	60	382	36	989
SEVENTH	23,000	21	1	11	28	20	12	7	1	2	27	12	11	18	151	5	487
EIGHTH	12,500	29	....	3	26	24	17	4	....	2	37	8	11	14	146	15	372
NINTH	13,000	28	....	3	24	9	8	....	1	1	43	20	2	19	130	9	362
TENTH	23,000	24	1	4	33	37	17	15	....	3	53	20	2	19	204	14	576
ELEVENTH	22,000	23	....	2	24	23	16	8	....	6	30	16	6	21	151	19	506
TWELFTH	20,000	27	....	4	20	34	18	3	....	5	69	24	3	26	206	25	550
THIRTEENTH	22,000	17	4	3	10	10	11	2	....	2	22	15	5	13	106	12	385
FOURTEENTH	22,000	31	11	1	14	10	20	14	....	2	53	15	6	25	180	27	622
FIFTEENTH	20,000	20	4	4	13	9	13	5	....	2	49	15	5	12	131	15	408
SIXTEENTH	30,000	31	14	3	32	21	33	6	....	7	89	42	7	32	292	15	956
SEVENTEENTH	21,000	26	5	13	52	17	18	17	2	7	50	12	13	21	215	12	545
EIGHTEENTH	15,000	27	4	5	8	9	6	3	....	5	33	17	6	12	108	16	418
NINETEENTH	20,000	23	....	2	5	4	11	6	....	2	60	24	9	9	152	9	155
TWENTIETH	21,000	17	....	4	18	3	6	2	....	3	31	8	1	14	103	6	353
TWENTY-FIRST	17,500	30	4	3	36	7	11	6	....	2	63	36	3	16	197	6	524
TWENTY-SECOND	14,500	22	2	4	22	6	9	5	1	1	34	10	2	15	121	7	316
TWENTY-THIRD	8,500	18	. ..	2	5	7	3	3	1	2	8	7	2	8	48	1	149
TWENTY FOURTH	9,500	13	1	....	1	3	1	3	....	2	11	7	5	4	37	3	122
TWENTY-FIFTH	9,000	25	....	1	6	0	6	4	....	....	25	6	3	6	77	3	227
TOTALS	450,000	24	53	90	479	40	318	130	7	81	968	396	124	458	3681	303	11,011

DEATHS AT INSTITUTIONS.

St. Peter's Hosp., 117. L. I. Coll. Hosp., 57. St. Paul's Orphan Asylum, 5.

Home for Destitute Children, 5.

City Hospital,

STILL BIRTHS.

Males	596
Females	437
Total	1033

TABLE VI.

DEATHS OCCURRING EACH WEEK, BY CLASSES,

FOR THE YEAR ENDING DECEMBER 31st, 1874.

MORTALITY BY WEEKS ENDING	JANUARY					FEBRUARY				MARCH				APRIL				MAY					JUNE				JULY				AUGUST					SEPTEMBER				OCTOBER					NOVEMBER				DECEMBER					Totals.	Per cent.
SATURDAY	3	10	17	24	31	7	14	21	28	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	5	12	19	26	31		
Zymotic Diseases	23	55	49	35	37	50	44	55	51	39	50	62	57	46	4	64	63	42	47	39	50	32	38	45	41	48	64	142	222	176	176	137	133	136	110	110	98	78	65	68	70	54	46	51	52	49	63	65	57	66	60	73	43	3,684	33.49
Constitutional Diseases	9	29	33	50	39	39	45	50	40	38	44	43	43	42	4	44	46	39	47	49	35	46	36	36	39	34	42	48	53	57	40	56	49	48	45	48	63	58	56	45	55	49	43	36	47	35	46	44	30	36	40	35	41	2,285	20.77
Local Diseases	37	82	91	79	72	64	93	99	83	92	106	95	73	71	7	90	68	81	76	86	72	74	64	74	46	80	61	62	74	75	53	81	52	59	42	57	87	63	61	62	59	62	76	70	75	81	85	69	78	66	70	90	73	3,872	35.11
Developmental Diseases	14	16	19	17	15	17	25	21	22	11	14	15	10	21	2	20	19	15	21	20	11	23	17	11	10	15	18	8	11	19	19	24	16	12	19	13	10	18	15	16	17	13	12	18	19	13	16	16	13	24	20	18	11	867	7.88
Deaths by Violence	2	4	4	7	10	3	3	1	6	3	5	6	5	4	3	4	6	4	7	5	5	2	9	6	4	6	13	7	14	8	4	12	9	5	3	4	11	5	5	5	8	10	8	7	4	4	6	5	4	3	4	8	3	303	2.75
Totals	85	186	196	188	173	173	210	226	202	183	219	221	188	184	19	222	202	181	198	199	173	177	164	172	140	183	201	267	374	335	292	310	259	260	225	252	269	222	202	196	209	188	185	185	197	182	216	199	182	195	194	224	171	11,011	100.00

was diphtheria, which is charged with 580 deaths, or over 5 per centum of the total mortality. This extraordinary rate points unmistakably to an epidemic influence which, while it has been virulent in character, has been somewhat restricted in extent. Its ravages have been chiefly experienced among the tenement house class, and in sections of the city where defect ive drainage and sub-soil saturation are known to exist. The largest number of deaths in any one ward, 131, came from the Sixth Ward; the greatest proportion namely, 115, occurred west of the westerly line of Henry street. This is a part of the ward where nearly all the lots are of made land, and have been filled in, to a greater or less extent, by mixed ashes and garbage, street sweepings, and other unwholesome materials. The same statement applies to some other points in the city where there has been a high mortality from diphtheria. The use of these disease-producing materials as a filling-in for low lands and sunken lots has not yet wholly been discontinued.

Croup.—The number of deaths due to croup was 318; this is 7 less than occurred during the previous year. Some doubt has been expressed as to the correctness of the returns on the ground that membranous croup has been reported as diphtheria. From a careful scrutiny of the certificates of these two diseases, and from my knowledge of the localities of diphtheria, and from the fact that these cases of croup do not repeat themselves in the same domicile, while diphtheria frequently does so, I have formed an opinion satisfactory to my own mind that the returns of these diseases should not be mistrusted more than many others.

Whooping Cough.—Whooping cough caused the deaths of 130 children, 127 of which were under the age of 5 years; 66 were under 1 year. Congestion of the lungs and brain, due to the violence of the cough, bronchitis and pneumonia were the principal complications.

Typhus Fever.—Seven deaths occurred from this disease. One in the Sixth, Seventh, Ninth, Twenty second and Twenty-third, and two in the Seventeenth Wards. The correctness of the diagnosis in some of these cases has been questioned, the certificates of death having been sent by physicians who are without any legal authority to practice medicine.

Typhoid Fever.—Typhoid fever is credited with only 81 deaths. This mortality compares favorably with that of previous years. In 1873 there were 103, and in 1872, 142 deaths from this cause. The highest number of deaths from typhoid fever in any ward occurred in the Sixth Ward.

Cerebro-spinal Meningitis.—Only 28 deaths occurred from this cause, while during the year 1873 the number was 114. Many of these cases were not of the epidemic form, but were simply inflammation of the brain and spinal tract.

Remittent and Intermittent Fevers.—The total number of deaths from malarious diseases, assuming either of the above types was 124. The Twelfth and Seventeenth Wards have the largest number charged to them.

Diarrhœal Diseases.-There has been a marked decrease in the death ate from this class of diseases during the last two years; in 1872 there

were 1,685; in 1873, 1,528: in 1874, 1,364. This shows a difference in favor of 1874 of 164 less than occurred during the previous year. Cholera morbus, diarrhœa and dysentery claim 396 and cholera infantum 968, which is 144 less deaths than are charged to this cause in 1873, and 280 less than in 1872. During the heated term, several certificates of death made their appearance at this department, with the cause assigned to epidemic cholera, but inspection in no instance verified the diagnosis. They were judged to be cases of severe cholera morbus, and in most instances there was found some obvious explanation for the severe character of the attack.

Other Zymotic Diseases.—Under this head are classified such diseases as puerperal fever, pyæmia, septicæmia, erysipelas, tonsilitis, and enterocolitis; for the actual number of deaths from each of these causes the reader is referred to table.

Enthetic or Inoculated Diseases.—In this class will be found 18 deaths due to syphilis, 16 of which were hereditary in their nature, and only 2 acquired; only 2 deaths are charged to hydrophobia, both being among adults; 6 deaths were due to gangrene of various forms.

Dietic Diseases.—Two hundred and thirty-five deaths are found in this class of diseases, the most prominent among them being inanition or malnutrition, which caused the deaths of 142 children under the age of 1 year; intemperance or alcoholism is the next in order, having caused by direct influence, 83 deaths.

Diathetic Diseases—Rheumatism.—There were 45 deaths assigned to this cause, the sexes being about equally represented, the ages ranging from 6 to 76 years.

Cancers.—One hundred and ninety-nine deaths are recorded as having occured from cancer in 26 different locations of the body; the greatest number in any one location was cancer of the uterus, 57, of which 22 were native, and 35 foreigners. Cancer of the stomach ranks next in order of number, there being 62 deaths assigned to this cause, 38 males, and 14 females. This is a large number from this disesse, and I am disposed to think that they were not all true cancer of the stomach, but, perhaps, in some instances, chronic gastritis, due to the long and continued use of alchoholic stimulants. Thirty-five were due to cancer of the breast. Of the total number 64 were males, and 135 females; native born, 80; foreign, 119.

Consumption.—Consumption caused 1,257 deaths in the City of Brooklyn. This is 109 less than the previous year, (1873); and 11.45 per cent of deaths from all known causes. Of this number 699 were natives of the United States—277 males, and 322 female; foreign born, 668; males, 227 females, 341. This death rate compares favorably with other cities having the same social status. The annexed table exhibits the per centage of this disease to the total mortality, and the annual death rate per 1,000 inhabitants, in the principal cities of the United States:

Comparative Table of Death Rates in American Cities, from Consumption, in 1874.

Cities.	Deaths from Consumption.	Per cent. of Consumption to Total Mortality.	Per 1,000 inhabitants.
New York, N. Y.	4,033	14.04	3.88
Philadelphia, Pa.	2,304	15.12	3.10
Brooklyn, N. Y.	1,267	11.45	2.18
St. Louis, Mo.	581	8.93	1.29
Chicago, Ill.	630	7.85	1.62
Boston, Mass.	1,309	16.75	3.46
Baltimore, Md.	1,636	14.00	2.96
District of Columbia,	471	15 90	3.14
Cleveland, Ohio,	17	8.10	1.23
Pittsburg, Pa.	331	9.78	2.41
Milwaukee, Wis.	136	7.12	1.36
Providence, R. I.	261	13.58	3.70
Rochester, N. Y.	188	13.38	3.10
Richmond, Va.	231	14.52	3.55
New Haven, Conn.	197	18.35	2.96
Troy, N. Y.	294	20.27	5.88
Charleston, S. C.	98	5.05	1.98
Memphis, Tenn.	137	11.93	2.74
Hartford, Conn.	55	9.35	1.22
Fall River, Mass.	148	12.55	3.41
Paterson, N. J.	125	14.01	3.12
Yonkers, N. Y.	55	15.52	1.52
Dayton, Ohio,	68	14.19	2.00
Quincy, Ill	52	9.37	1.73
Peoria, Ill	32	9.46	1.06
Salem, Mass.	74	14.91	2.84
Lansing, Mich.	10	14.49	1.47

This table will no doubt excite surprise in the minds of those who are the habit of inveighing against the "strong air" of Brooklyn, as being much more trying to persons suffering from pulmonary troubles, than ie air of New York. For example, so far as the figures of one year can ove anything, the indications are not adverse to this locality, as compared ith many others.

Tabes Mesenterica, or Marasmus.—The number of deaths due to this ause was 426—60 per cent. being children under the age of two years, nly 19 being over the age of five years. Many of the latter were cases senile gangrene, (decay of age), and were not due to any tubercular eposit in the intestines. This cause of death is one that is used by many ysicians, when they can find no other term to express their meaning. have no doubt that many of the number might properly be classed as sthenia, or debility consequent from cholera infantum, and other diarrhœal seases, and due to the want of proper nourishment, bad management, d negleet on the part of the parents, after those diseases. During the st quarter of the year, the death rate from this cause always increases—is, in a measure, being a remote consequent of the excessive heat of the mmer, as well as the diseases incident to the season; for after the season

for cholera infantum has passed, and many of those little ones have recovered from that disease, the alimentary tract is left in such a condition, that the processes of digestion and absorption are seriously impaired. Consequently, death takes place more from malnutrition than because of any tubercular deposit in the intestinal tract, as the name tubes mesenterica would seem to imply. The deaths among the males predominate.

Hydrocephalus.—Two hundred and sixteen deaths are charged to this cause. The vast majority of these deaths occur in the acute stages, and 200 of them died before reaching their fifth year; 1 death at 25, and 1 at 50 years.

Tubercular Meningitis—This disease is also confined to early childhood, is credited with 108 deaths. The differential diagnosis between this and the former disease in children, is not always easily defined, hence the two diseases are sometimes confounded, and both causes of death may appear upon the same certificate.

Diseases of the Nervous System.—One thousand, two hundred and thirty-one deaths are charged to this class of diseases, the most prominent among them being convulsions, apoplexy, paralysis, congestion, and inflammation of the brain and its membranes.

Convulsions.—Convulsions are charged with having caused 448 deaths. This is 180 less than the previous year. The Registrar regards this cause of death only as a symptom of some illy-defined disease, and he has so far as practicable classified all deaths having this cause given with a primary cause according to the primary. Such, for instance, as scarlatina and convulsions would be classified as searlet fever, and the same with dentition, from which there are 136 deaths. Nine tenths of the eertificates, with dentition as the primary cause of death upon, also stated that convulsions was the immediate death sympton.

Apoplexy.—This cause of death was assigned in 216 cases. This is 30 in excess of the previous year. For the purposes of statistical information I do not consider this figure reliable, as many of these cases were eertified to by Coroners. The exact cause of death is not always determined by autopsy, at their inquests.

Paralysis.—There were 45 deaths due to this cause, and 30 to partial paralysis (hemiplegia and paraplegia). The sexes being about equally represented.

Congestion of the Brain.—One hundred and seventy-two deaths were assigned, 113 not having reached their fifth year, 84 males, and 88 females.

Sun-stroke—From this cause 6 deaths occurred, this being one more than the previous year. Five were males and one female. The laborers in the streets seem to be the principal sufferers. Eight deaths were reported from tetanus.

Diseases of the circulatory system.—To this class of diseases 397 were charged. All diseases of the heart, vein and arteries are included in this classification. There were 201 deaths due to valvular disease of the heart,

TABLE V.

DEATHS FROM ZYMOTIC DISEASES IN BROOKLYN.

DEATHS FROM SMALL-POX, MEASLES, SCARLATINA, DIPHTHERIA, WHOOPING-COUGH, TYPHOID FEVER, TYPHUS FEVER, CHOLERA INFANTUM, DIARRHŒAL MALADIES, AND OTHER ZYMOTIC DISEASES.

REGISTERED DURING THE YEAR ENDING DECEMBER 31st, 1874.

WARDS.	Estimated Population, 1874.	Health Rate, per 1000, by Wards.	Small-pox.	Measles.	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus Fever.	Typhoid Fever.	Cholera Infantum.	Cholera Morbus, Other Diarrhœal Diseases.	Remittent Fevers.	Other Zymotic Diseases.	Total Deaths from Zymotic Diseases.	Deaths by Accident or Negligence. (*Coroners' Inquests.*)	Total Deaths from all Causes.
FIRST	17,500	17	....	2	3	3	9	6	....	2	21	14	2	11	97	11	303
SECOND	9,000	28	1	1	16	5	15	3	....	2	14	4	....	16	88	9	256
THIRD	18,000	20	....	3	13	2	13	5	....	3	23	15	7	28	142	5	367
FOURTH	13,000	20	1	1	12	1	8	....	....	....	22	13	1	13	83	5	267
FIFTH	20,000	24	....	2	36	1	9	3	....	3	35	12	....	26	137	18	496
SIXTH	30,000	32	....	9	22	15	28	12	1	15	67	25	12	60	382	36	989
SEVENTH	23,000	21	1	11	28	2	12	7	1	2	27	12	11	18	151	5	487
EIGHTH	12,500	29	....	3	26	2	17	4	....	2	37	8	11	14	146	15	372
NINTH	13,000	28	....	3	24	1	8	....	1	1	43	20	2	19	130	9	362
TENTH	23,000	24	1	4	33	3	17	15	....	3	53	20	2	19	204	14	576
ELEVENTH	22,000	23	....	2	24	2	16	8	....	6	30	16	6	21	151	19	506
TWELFTH	20,000	27	....	4	20	3	18	3	....	5	69	24	3	26	206	25	550
THIRTEENTH	22,000	17	4	3	10	1	11	2	....	2	22	15	5	13	106	12	385
FOURTEENTH	22,000	31	11	1	14	1	20	14	....	2	53	15	6	25	180	27	622
FIFTEENTH	20,000	20	4	4	13	4	13	5	....	2	49	15	5	12	131	15	408
SIXTEENTH	30,000	31	14	3	32	27	33	6	....	7	89	42	7	32	292	15	956
SEVENTEENTH	21,000	26	5	13	52	17	18	17	2	7	50	12	13	21	215	12	545
EIGHTEENTH	15,000	27	4	5	8	9	6	3	....	5	33	17	6	12	108	16	418
NINETEENTH	20,000	23	....	2	5	4	11	6	....	2	60	24	9	9	152	9	455
TWENTIETH	21,000	17	....	4	18	3	6	2	....	3	31	8	1	14	103	6	353
TWENTY-FIRST	17,500	30	4	3	36	7	11	6	....	2	63	36	3	16	197	6	524
TWENTY-SECOND	14,500	22	2	4	22	6	9	5	1	1	34	10	2	15	121	7	316
TWENTY-THIRD	8,500	18	....	2	5	7	3	3	1	2	8	7	2	8	48	1	149
TWENTY-FOURTH	9,500	13	1	....	1	3	1	3	....	2	11	7	5	4	37	3	122
TWENTY-FIFTH	9,000	25	....	1	6	0	6	4	....	....	25	6	3	6	77	3	227
TOTALS	150,000	24	53	90	479	160	318	130	7	81	968	396	124	458	3684	303	11,011

DEATHS AT INSTITUTIONS.

St. Peter's Hosp., 117. L. I. Coll. Hosp., 57. St. Paul's Orphan Asylum, 5.

Home for Destitute Children, 5.

City Hospital,

STILL BIRTHS.

Males	596
Females	437
Total	1033

TABLE VI.

DEATHS OCCURRING EACH WEEK, BY CLASSES,

FOR THE YEAR ENDING DECEMBER 31st, 1874.

MORTALITY BY WEEKS ENDING	JANUARY					FEBRUARY				MARCH				APRIL				MAY					JUNE				JULY				AUGUST					SEPTEMBER				OCTOBER					NOVEMBER				DECEMBER					Totals.	Per cent.
SATURDAY	3	10	17	24	31	7	14	21	28	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	5	12	19	26	31		
Zymotic Diseases	23	55	49	35	37	50	44	55	51	39	50	62	57	46	44	64	63	42	47	39	50	32	38	45	41	48	64	142	222	176	176	137	133	136	116	110	98	78	65	68	70	54	46	51	52	49	63	65	57	66	60	73	43	3,684	33.49
Constitutional Diseases	9	20	33	50	39	39	45	50	40	38	44	43	43	42	45	44	46	39	47	49	35	46	36	36	39	34	42	48	53	57	40	56	49	48	45	48	63	58	56	45	55	49	43	36	47	35	46	44	30	36	40	35	41	2,285	20.77
Local Diseases	37	82	91	79	72	64	93	99	83	92	106	95	73	71	78	90	68	81	76	86	72	74	64	74	46	80	64	62	74	75	53	81	52	59	42	57	87	63	61	62	59	62	76	70	75	81	85	69	78	66	70	90	73	3,872	35.11
Developmental Diseases	14	16	19	17	15	17	25	21	22	11	14	15	10	21	25	20	19	15	21	20	11	23	17	11	10	15	18	8	11	19	19	24	16	12	19	13	10	18	15	16	17	13	12	18	19	13	16	16	13	24	20	18	11	867	7.88
Deaths by Violence	2	4	4	7	10	3	3	1	6	3	5	6	5	4	3	4	6	4	7	5	5	2	9	6	4	6	13	7	14	8	4	12	9	5	3	4	11	5	5	5	8	10	8	7	4	4	6	5	4	3	4	8	3	303	2.75
Totals	85	186	196	188	173	173	210	226	202	183	219	221	188	184	195	222	202	181	198	199	178	177	164	172	140	183	201	267	374	335	292	310	259	260	225	232	269	222	202	196	209	188	185	185	197	182	216	199	182	195	194	224	171	11,011	100.00

MORTALITY FROM DIPHTHERIA BY WARDS IN THE CITY OF BROOKLYN DURING THE YEAR 1874.

Scale 1/16 of one inch to each fatal case.

15 from aneurisms of various kinds; 68 were credited from inflammatory conditions of the heart. Many of the cases of cardiac disease were certified to by the coroners by whom no post mortem was held, and consequently their reports cannot be considered as always reliable; 37 were deaths due to disease of the heart, no special lesion being stated on the death certificate.

Diseases of the respiratory system.—There were 1,288 fatal cases of diseases of the respiratory organs; bronchitis, which is more particularly a disease of early childhood and of old age, is credited with having caused 285 deaths; of this number 201 were children under the age of five years; pneumonia caused 744 deaths; all ages seem to suffer from this disease, but the young and middle-aged are the principal victims. Congestion of the lungs destroyed 114 persons, 15 of whom were under the age of five years. In many instances it was associated with some other fatal disease thus causing it, in reality, to stand in the relation of a symptom, rather than a disease.

Diseases of the digestive system.—To all diseases of this class 586 deaths are accredited. They include all diseases of the stomach, liver and intestinal tract. Several of the deaths charged to diseases of the liver, of which there were 130, in my opinion were really due to intemperance or its effects. The reader is referred to table No. 4 for this classification.

Urinary System.—There are 311 assigned to diseases of the urinary organs, the most prominent being Bright's disease of the kidneys, of which there were 190—110 males and 80 females. Acute inflammation of the kidneys is charged with 38 deaths, inflammation of the bladder, 25; and uremic poisoning, 37.

Diseases of the generative system.—To this class are charged 23 deaths —8 were ovarian tumors and 6 uterine. Females only are classified in this table.

Locomotory system—The deaths in this class were principally caused by diseases of the bones, with one exception, to wit: spina bifida, of which there were 8 deaths; spinal disease (Pott's), 8; hip-joint disease, 6; 1 disease of the knee-joint, and 1 osteo-myelitis, making a total of 24 deaths from these causes.

Tegumentary system.—This class includes such diseases as abscesses, carbuncles, eczema, and 1 death occurred from paronychia, (felon), the total number from all these causes being 12.

Developmental diseases.—The deaths in the first order of developmental diseases, of which there were 289, all occur among children under the age of 1 year; very few, if any, survive the fourth week. The malformations and diseases with which they are born, forbid their existence for any length of time. The principal causes being premature birth, cyanosis, imperforate rectum, collapse of the lungs, and umbilical hemorrhage.

Diseases of the puerperal state.—One hundred and thirty seven deaths occurred at or about the time of child-birth, 46 were natives and 91 foreigners, the ages ranging from 15 to 45 years, the most prominent cause

being metro-peritonitis, from which there were 51 deaths. Twenty-five are charged simply to child-birth, 27 to puerperal convulsions, 23 to post or ante-partum hemorrhage, 3 to puerperal mania, 4 ruptnre of the nterus, 2 inversion of uterus, and one each to extra-uterine pregnancy and abortion.

Old Age.—To this cause 303 deaths are assigned, the ages range from 65 to 104 years; 105 were males and 198 females; 120 were natives of the United States, and 183 were of foreign birth; 4 deaths were charged to senile gangrene.

Atrophy and Asthenia.—The debility of early infancy and old age caused 134 deaths, 94 of which were children under the age of 2 years. Of the total number of deaths from these causes, 76 were males and 58 females.

Accident and Negligence.—There were 244 deaths due to these causes. Table No. 7 exhibits the nationality and cause; 69 from drowning, 59 were due to falls, 26 were killed or wounded to such a degree by vehicles in the streets that death ensued; 23 were caused by burns; 14 by being scalded; 18 from wounds; 12 from fractures and contusions; 5 by the accidental discharge of loaded weapons; 6 from swallowing poisonous substances; 3 by the fall of a building; 2 from swallowing foreign bodies (buttons); 1 by being mangled by an enraged boar; 6 from suffocation, 3 of which were by bed clothes and 3 by being buried in the earth by the fall of embankments.

Homicides.—There were 18 deaths caused by the hands of individuals; 3 were children of the Dwyer family, who were killed by their mother with a cooper's adze; 5 from blows; 5 from stab wounds by knives; 4 persons came to their death by pistol shot wounds; 1 by being stabbed by a scissors.

Suicides.—Those who died by their own hands numbered 34, of which 30 were males and 4 females; 8 were natives of the United States, and 26 foreigners, their ages varying from 20 to 65 years, the largest number being about 40 years of age, at which period of life 10 committed suicide. The manner in which they caused their death is as follows: by hanging, 9; arsenic, 3; leap from a height, 1; poison by opium, 7; pistol-shot wounds, 7; razor, 6; stab wounds, 1. Of the number who destroyed their lives by hanging, 6 were Germans.

Mortality by Wards.—The charter of the city was amended by the Legislature during the year 1873, one of the amendments being a change in the boundary lines of some of the wards, and a sub-division of the Ninth and Twenty-first Wards; the Ninth was divided into 2 wards, and the Twenty-first into 3; thus, instead of having 22 wards, the city now has 25, the old First and Third Wards being consolidated and are known as the First Ward. By reason of this change in the boundaries, it is difficult to determine with any degree of certainty the actual population of these wards. However, the population has been carefully estimated in each of the respective wards, and below will be found a table showing the total number of deaths from the chief zymotic causes, and the actual number from all causes, with the rate per 1,000 inhabitants. If the State census is completed before the publication of this report, these estimates

will give place to the actual count. This tabular statement I consider one of the most important parts of this report, as builders, real estate dealers, and those seeking homes in this city, will be greatly benefitted by consulting it, and by taking it as a guide when making their investments. This part of my report points out where malaria exists, the locality that is most infected with small-pox and other contagious diseases, and the actual rate of mortality per thousand inhabitants. It will be observed that the Sixth and Sixteenth Wards have the largest death-rate. The large mortality in the Sixth is due, in a measure, to diphtheria, which has been epidemic in that part of the city, and to the fact that there are two hospitals (St. Peter's and the Long Island College Hospital) in which there were 174 deaths: the death-rate per 1,000 inhabitants was 32. In the Sixteenth Ward is a large German population, who live mostly in tenement houses, with poor ventilation and drainage. The number of deaths per 1,000 was 31. The smallest number of deaths per 1,000 occurred in the Twenty-fourth Ward. The population being estimated at 9,500, this has only 13 deaths per 1,000; the three next lowest being the First, Thirteenth, and Twentieth Wards, where the death-rate was 17.

TABLE OF DEATH-RATES BY WARDS FROM ALL CAUSES, AND FROM CERTAIN ZYMOTIC DISEASES IN 1874

Wards.	Small-pox.	Scarlet Fever.	Diphtheria.	Typhoid Fever.	Remittent Fever.	Cholera Infantum.	Total from all Zymotic Causes	Total No. of Deaths from all causes.	Estim'd Population, 1874.	Death-rate per 1,000
1....	..	3	28	2	2	20	97	303	17,500	17
2....	1	16	16	2	..	14	88	256	9,000	28
3....	..	13	32	3	7	23	142	367	18,000	20
4....	1	12	12	..	1	22	83	267	13,000	20
5....	..	36	11	3	..	35	137	496	20,000	24
6....	..	22	131	15	12	67	382	989	30,000	32
7....	1	28	21	2	11	27	151	437	23,000	21
8....	..	26	24	2	11	37	146	372	12,500	29
9....	..	24	9	1	2	43	130	362	13,000	28
10....	1	33	37	3	2	53	204	676	23,000	24
11....	1	24	22	6	6	36	151	506	22,000	23
12....	..	20	24	5	3	60	206	550	20,000	27
13....	4	10	19	2	5	22	106	385	22,000	17
14....	11	14	19	2	6	53	186	622	22,000	31
15....	4	13	9	2	5	49	131	408	20,000	20
16....	14	32	27	7	7	89	292	156	30,000	31
17....	5	52	17	7	13	50	215	545	21,000	26
18....	4	8	9	5	6	33	108	418	15,000	27
19....	..	5	24	2	9	60	152	455	20,000	23
20....	..	18	16	16	1	31	103	353	21,000	17
21....	4	36	17	2	3	63	197	523	17,500	30
22....	2	22	16	1	2	31	121	316	14,500	22
23....	..	5	7	2	2	8	48	149	8,500	18
24....	1	1	3	2	5	11	37	122	9,500	13
25....	..	6	20	..	3	25	77	227	9,000	25
Total,.	33	479	580	81	124	968	3,684	11,011	450,000	324

Births.—During the year 1874 there were recorded 7,668 births, and the rate is about 17 per 1,000. This is at least 2,000 more than any previous year since the organization of the Metropolitan Board of Health in 1866. But even this is by no means a complete registration. The last census shows 38.45 per 1,000 to be the birth rate for the entire country; 30 per 1,000 is estimated to be the rate in this section. The following is a summary of the number of births during the last nine years:

1866*.....3,124	1871,.....4,424
1867,.....5,244	1872,.....4,216
1868,.....4,802	1873,.....5,027
1869,.....5,349	1874,.....7,668
1870,.....4,817	

There were 1,303 still-births.

Marriages.—During the year 1874 2,675 marriages were recorded in this office. This year compares with the other years as follows:

1866, (partial)..... 853	1871,.....2,447
1867,.....1,167	1872, ...2,561
1868,.....2,130	1873, ...2,520
1869,.....2,461	1874,.....2,575
1870,.....2,367	

From this summary it will be seen that the largest number reported in any one year was during the year 1874. This number is far below that which actually occurs, being less than 6 per 1,000, while in 1872 nine cities in this country yielded a rate of 10.34 per 1,000.

Respectfully submitted,

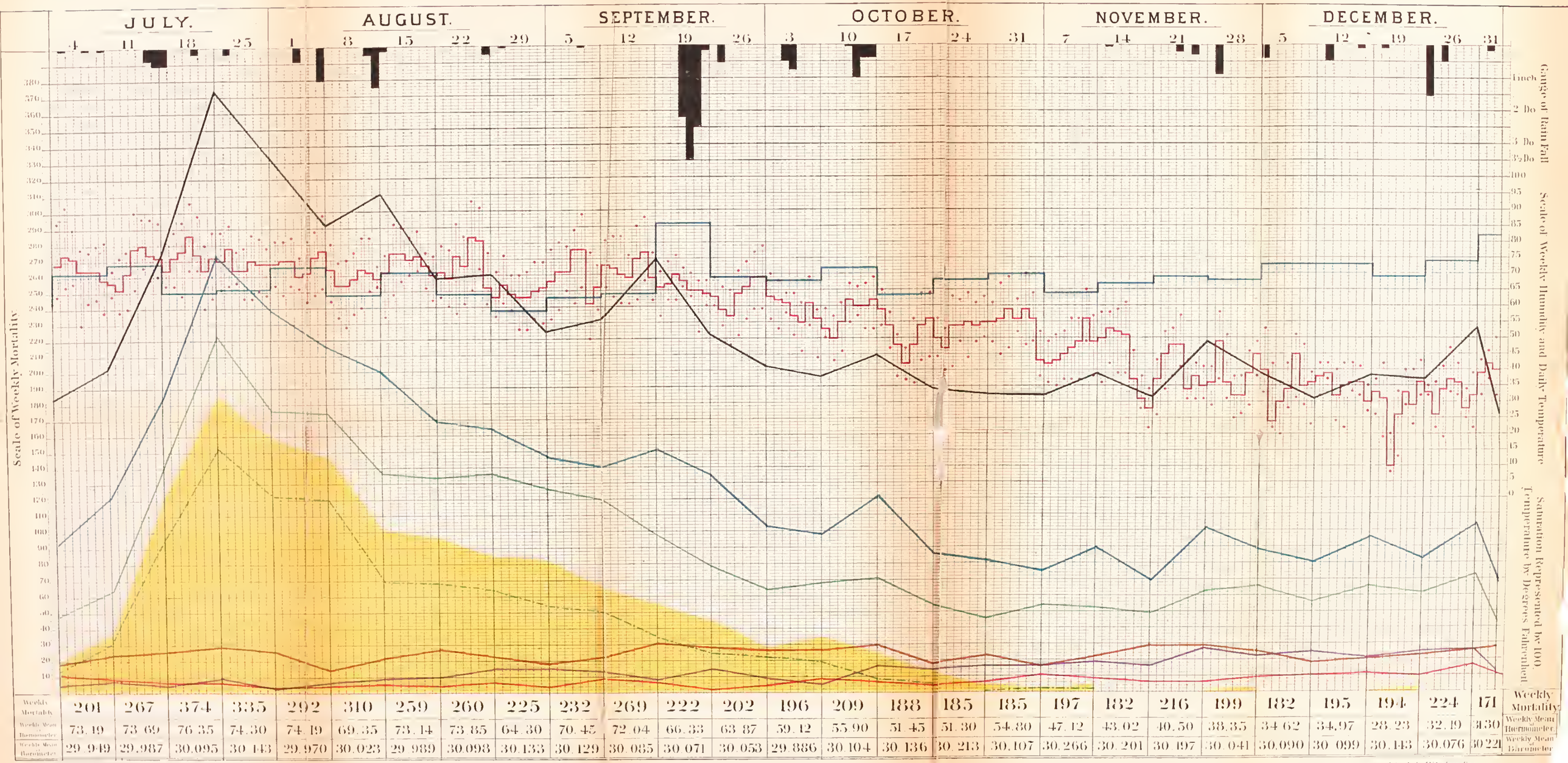
JAMES WATT, M. D. *Register.*

* Eight months is 1866

CHART

Illustrating the Actual Weekly Mortality during the Six Months ending December 31st, 1874.

(With the Meteorological Observations for the same Period.)



Weekly Mortality	201	267	374	335	292	310	259	260	225	232	269	222	202	196	209	188	185	185	197	182	216	199	182	195	194	224	171	Weekly Mortality
Weekly Mean of Thermometer	73.19	73.69	76.35	74.30	74.19	69.35	73.14	73.85	64.30	70.45	72.04	66.33	63.87	59.12	55.90	51.45	51.30	54.80	47.12	43.02	40.50	38.35	34.62	34.97	28.23	32.19	31.30	Weekly Mean of Thermometer
Weekly Mean of Barometer	29.949	29.987	30.095	30.143	29.970	30.023	29.989	30.093	30.133	30.129	30.085	30.071	30.053	29.886	30.104	30.136	30.213	30.107	30.266	30.201	30.197	30.041	30.090	30.099	30.143	30.076	30.221	Weekly Mean of Barometer

Mortality Times by Jas Watt M.D. Registrar

Meteorological Scale by D. Culver Esq. Chief Engineer Liverpool Pat.

EXPLANATION.

TOTAL MORTALITY FROM ALL CAUSES — CHILDREN UNDER 5 YEARS — ZYMOTIC CAUSES — CONSUMPTION — SCARLET FEVER — DIPHTHERIA — DIARRHŒAL — CHOLERA INFANTUM

The irregular red line across the Chart indicates Daily Mean Temperature. The red points at ends of perpendicular bars indicate Daily Extremes of Temperature. The irregular blue line indicates the Weekly Mean Humidity.

RAIN FALL

REPORT OF THE SANITARY SUPERINTENDENT.

OFFICE OF THE SANITARY SUPERINTENDENT,
BOARD OF HEALTH, Jan. 1, 1875.

To the Secretary of the Board of Health:

I respectfully submit the following report of the duties performed by the Sanitary Inspectors and other officers and employees of the Board under my superintendence, and by myself, during a period of nearly twenty months, namely, from the organization of the Board to the end of December, 1874.

On the 8th of May, 1873, the Board of Health organized and made, among others, the following appointments, namely:

Sanitary Superintendent:
B. A. SEGUR, M.D.

Sanitary Inspectors:
F. H. COLTON, M.D.,
S. N. FISK, M.D.,
J. H. RAYMOND, M.D.,
R. E. VAN GIESEN, M.D.,
THOMAS BAYLIS, M.D.

Clerks in Office of Sanitary Superintendent:
A. H. DOTY,
A. T. DODGE.

The following changes have since occurred:

R. E. Van Giesen, Sanitary Inspector, resigned 4th August, 1873.

Walter Reed, M.D., appointed Assistant Sanitary Inspector, 31st May, 1873.

W. G. Russell, M.D., Assistant Sanitary Inspector, 31st May to Nov. 1st, 1873. Vaccinating Physician, 16th Feb., 1874, to 1st July, 1874; again, 1st October.

W. H. Caemmerrer, M.D., appointed Assistant Sanitary Inspector 31st May, and resigned 1st July, 1873.

W. J. Duffield, M.D., Assistant Sanitary Inspector, 31st May to 8th July, 1873.

D. H. Cronyn, M.D., appointed Assistant Sanitary Inspector, and assigned to duty in office of Sanitary Superintendent 31st May, 1873; 12th August to 18th June, 1874, in office of Registrar of Vital Statistics; since, Inspector of Contagious Diseases.

S. P. McIlroy, M.D., Assistant Sanitary Inspector, 31st May to 1st Nov.

1873; appointed Vaccinating Physician 13th October, 1874; in Nov., transferred to Registrar's office.

S. J. Holley, M.D., appointed Assistant Sanitary Inspector 10th June, 1873.

T. P. Corbally, M.D., appointed Assistant Sanitary Inspector 8th July, 1873.

R. M. Wyckoff, M.D., appointed Sanitary Inspector 8th August, 1873, and assigned to duty in office of Sanitary Superintendent, where he discharged very important duties in organizing and supervising the clerical labor; the Board on 23d April, 1874, designated Dr. Wyckoff Assistant Sanitary Superintendent; 8th October, transferred to office of Registrar of Vital Statistics.

G. W. Hall, M.D., appointed Assistant Sanitary Inspector 15th December, 1873, promoted to Sanitary Inspector 30th April, 1874.

A. L. Lowell, M.D., appointed Vaccinating Physician 19th Feb., 1874; served to 1st July; again appointed 8th October.

W. E. Griffiths, M.D., appointed Vaccinating Physician 8th Oct., 1874.

J. A. Jenkins, M.D.

C. F. McDonald, M.D.

O. J. D. Hughes, were added to the Vaccinating Corps, 8th Dec., 1874.

Changes, suggested by the convenience or interests of the service in other divisions, have several times been made of persons performing clerical labor in the office of the Sanitary Superintendent, and additions have been made to original assignment when the Board have been satisfied that such were necessary for the orderly and prompt transaction of business.

At present the following clerks are on duty: A. H. Doty, occupied with citizen's complaints, and permits for ships, scavengers, &c. C. E. Holliday, contagious diseases register, reports, and order book clerk, &c. John F. Murtagh, assistant clerk.

Since July, the Board has employed John Van Saun as Special Inspector at the offal dock.

The recent increase of small pox has made it necessary for the Board to employ one man in disinfection. John Holliday performs this duty, under the direction of Dr. Cronyn, the Inspector of Contagious Diseases.

The Board of Police have detailed for duty in the Health Department the following officers: Holliday, until his resignation from the police to accept a clerkship in the Health Department, Lent, and McGurr, who have successively performed important duties with the Inspector of Contagious Diseases, particularly in his supervision of small pox. The necessary removals, fumigations, destruction of infected bedding, and isolation of infected persons, are efficiently aided by an officer of police.

The law of 1873, under which the Board of Health acts, confers and imposes upon it all the authority and duties conferred or imposed upon the Metropolitan Board of Health, for the preservation of life and health, and to prevent the spread of disease.

The Sanitary Superintendent and Inspectors, when they began their labors, had the precedents and examples of that Board contained in its valuable and instructive annual reports and the common knowledge of its good work in previous years in the Metropolitan Sanitary District to excite their emulation and to aid them in untried fields of labor. It was fortunate that one of the Sanitary Commissioners of the Board had been an executive officer, and that two of the Sanitary Inspectors appointed by the Board had also been Sanitary Inspectors, of the Metropolitan Board.

Its system of administration, and its methods of work had been devised, adapted, applied and directed by scholars in sanitary law and science, by practical investigators of the constant sources of disease and death among the crowded poor of New York, and of the spread of epidemic pestilence, and by an executive which previous years of military experience had developed. With such adequate preparation for its special work, and set to work in such cities as New York and Brooklyn, the Metropolitan Board of Health, from the first had been able to vindicate itself by its fruits. Its reports have commanded the admiration of the best sanitarians abroad, and its immediate results have seemed so remarkable to English observers who have been laboring for sanitary improvements at home for a generation, that they ascribe much of what has been achieved to the facility with which a new people take up new things; the truth is that the necessarily aggressive work of the Board excited so much opposition that it could not have stood two years, but for the support of a public opinion in New York trained by years of inquiry of Legislative and Citizens Reform Commissions.

When I undertook the duties of my appointment, I was oppressed with the feeling that Brooklyn had need of an experienced, educated and efficient sanitary officer in my place; but I was greatly encouraged by the appointment by the Board of a corps of Sanitary Inspectors, which was a guarantee that the single purpose was to serve the sanitary interests of the city, for the names of the gentlemen selected were among the best and most promising of the medical profession in Brooklyn, men that would do faithful service, and educated by their work, would become valuable to the city as sanitary experts. Their reports, herewith submitted, carefully studied, will show to what good purpose they have engaged in their work.

The Board gave the Sanitary Inspectors and Superintendent, with their appointments, the following general charge:

"The Sanitary Superintendent occupies a position which is regarded by the Board as one of very great importance, as in his official relations he is brought in contact with all classes of citizens. He shall exclude those who have no business with the department, and give a ready reception to persons, however humble, who come to claim its aid. He is to cultivate such relations with the physicians of the city as will give character to his official position, and secure their support and co-operation in performing his varied duties. As the executive officer of the Board, he shall enforce its orders in an impartial and decided manner. He shall be in his office from 9 A. M. to 1 P. M., daily, and at 4 o'clock, when the offices close, for the transaction of business and devote the remainder of his time in making himself familiar with the sanitary condition of all parts of the city, so that he can exercise an intelligent supervision over the work of the inspectors. He shall divide the city into five sanitary districts and assign an Inspector to each. He shall place, with the consent of the Board of Police, a complaint book in each station house, and invite the public to make known the existence of any causes prejudicial to the public health. He shall secure for his office a complete record of the location, ownership and sanitary condition of all tenement houses, inhabited cellars, livery stables, cow stables, breweries, distilleries, sunken lots, all shell-burning, offal, fat, bone, swill and soap boiling establishments. And also of all places used for manufacturing purposes, which may, from their location or the character of the work done, affect the health of those employed or of the residents in the neighborhood. He shall receive, carefully scrutinize, and forward, for the action of the Board, all complaints, semi-weekly, and

other reports made by Inspectors, report promptly upon such subjects as may be referred to him for investigation, and generally, according to instructions, exercise a practical supervision in respect to the Inspectors, agents, and other persons (other than the Secretary in his capacity as Secresary, and members of the Board, or members of the police force) who may exercise authority or be employed by the Board under this act, and promptly report to the Board any dereliction or neglect of duty on the part of any such Inspector, agent or employe.

"The Sanitary Inspectors shall regard themselves at all times, and in all their relations to the public, as the direct representatives of the Board. They must be courteous, but firm in the discharge of their duties, and thus so favorably commend the important work the Board proposes to accomplish that they may secure the intelligent co-operation of the residents of their respective districts. They must remember that very many of the violations of sanitary laws and ordinances result either from neglect or ignorance, and that they have to only point out the nature of these violations to secure compliance, without any official action on the part of the Board. In making their inspection they shall be careful to record the name and residence of the responsible owner or agent, state explicitly the nature or the source of complaint, with the declaration that it is either dangerous to life or detrimental to health. Their complaints must be forwarded to the office daily. They shall, twice in each week, report to the Board the amount, the character, and results of their work, and shall, when required, report upon any special subject demanding immediate investigation. These reports will furnish to the Board the measure by which they will estimate the activity and efficiency of the Inspectors in prosecuting the work consigned them."

In compliance with the foregoing instructions, I divided the city into five Sanitary Inspection Districts, as follows: First District—Dr. F. H. Colton, Inspector; wards, 5, 2, 1, 6, 12, and the water front from Gowanus to Navy Yard. Second District—Dr. J. H. Raymond, Inspector; wards, 3, 10, 22, 8. Third District—Dr. Thomas Baylis, Inspector; wards, 4, 11, 20, 9. Fourth District—Dr. S. N. Fisk, Inspector; wards, 7, 19, 21, 18. Fifth District—Dr. R. E. Van Giesen, Inspector; wards, 13, 14, 15, 16, 17.

The population of these districts, from 66,000 to 101,000, and the area, from 1.71 to 7.39 square miles, or an average of more than 4 square miles to each district with their varied topographical situation, density of inhabitants, employments, habits, prejudices, interests, surroundings and limitations on the one hand and on the other, one Inspector in each district, convinced that preventable sickness and high death rates are realities and evils to be contended with and ameliorated, and commissioned to find and report to the Board, for its action, any and every "building, erection, excavation, premises, business pursuit, matter or thing, or the sewerage, drainage, or ventilation thereof," in a condition or in effect dangerous or detrimental to life or health. The instructions of the Board were, and my efforts have always been directed to a systematic and constant survey and supervision of tenement houses, inhabited cellars, schools, manufactories, and shops where young and old, breathing in confined air, by day and night, suffer the insidious but certain deterioration of crowd-poison; of cow stables where hundreds of cows are confined in low, close, dark and filthy stables and fed mainly, or largely, on swill and fermenting grains, and their milk, distributed among the infants of the poor in this city: and frequently their carcasses, when dead, taken to the offal dock; of slaughter-houses, of the numerous business-pursuits, legitimate in themselves, but

when located in the built-up portions of cities, requiring the most intelligent and careful regulation to protect the neighborhood from unnecessary annoyance and offence; of shops where unwholesome meats, vegetables and fruits are sold. But these labors have constantly been interrupted, and often suspended for long periods by the miscellaneous and scattered work of investigating complaints of citizens, which daily demand the attention of the Inspectors, (and if they happen to be in remote parts of his district, consume a great deal of his time in simply getting from place to place), by investigations of cases of contagious diseases, their origin and propagation (this has been done in every case of diphtheria by the Inspector in whose district it occurred) and by various other special inquiries, some of which will be more particularly referred to hereafter.

No municipal department, no government can undertake at the public cost, to place or keep a city population in a favorable sanitary condition. What a well-governed city may do in the important matters of streets and gutters first well-paved and then swept daily and the filth removed, of pure water supply, of well-laid sewers which carry off and discharge sufficiently far away the surface-water and the slop-water and excrementitious matters from dwellings, of regular and frequent removal of garbage, and dead animals, of draining away stagnant water, and the under drainage of a saturated and miasmatic soil, of prohibition within its limits of swine, cow stables, slaughter-houses and the allied offensive trades, &c., &c., we may imagine and perhaps find examples of. When the public service thus performed shall stimulate and enforce a regard for public health, it will become an efficient ally to the Inspector in his official visits to tenement houses, industrial buildings, &c.

The Sanitary Inspector goes as a practical physician as well as an official, and, directed by the Board to labor for the co-operation of the people, he instructs them in matters of house and personal hygiene, often illustrating and impressing his lessons by examples of sickness which have originated from dirty and neglected living and sleeping rooms, leaking or ob structed drain-pipes, filthy cellars and yards, and overflowing cesspools and sinks. Diphtheria, particularly, has been so often found by the Inspectors in houses poisoned by broken soil-pipes and foul cesspools, that the impression of a causative connection is very strong.

The more familiar the Inspector becomes with his work the larger the share of his time which will be taken by this personal work, and the more accustomed the people are to the visits and counsels of the Inspector the more gladly they welcome and conform to them. This increase of the personal influence is confirmed by the general voice of experienced Sanitary Inspectors. It is obvious that the general and gross neglect of hygiene can only be met by this work of visitation from house to house. The Sanitary Inspector becomes a family physician, not for the cure but for the prevention of disease. The record of his work does not appear in any numerical statement of complaints made by him to the Board. His knowledge, experience, tact, fidelity and perseverance reach their best effects when he has secured the occupants of the tenement houses in his district, the agents, and the owners, all instructed and willing co-workers with himself.

At all times, during the past twenty months, when the Inspectors have had any time to spare from some imperative or special work, they have devoted themselves to the visitation of tenement houses. But the time at command has been so limited and the inspection districts so large, that not yet have all the tenement houses in the city been reached. The

work has been most pressed in the two extreme seasons, the summer, because of the high mortality in this class of houses in the hot weather, and in the winter because of the increase of contagious diseases.

The very valuable Tenement House Act, establishes with the sanctions of law a standard of air, light, decency in privy accommodations, sewer connections, &c., below which the cupidity and indifference of owners of such houses shall not be permitted to go. These essential features of human habitations are each provided for by numerous regulations as to number, size and location of windows, space in rooms, between buildings, &c., arrangement of drains and traps, removal of filth, water supply, and cleanliness and supervision, all enforced by authority given to vacate any house certified by the Sanitary Superintendent to be unfit for human habitation. It has not been practicable in the time at command to make a complete survey of tenement houses, with a view to require such structural alterations and improvements as would bring them into conformity to the law. But to secure the most attainable and immediate results, the Inspectors were instructed to direct their attention to existing, urgent and promptly remediable causes of disease, reference being had to the season and its requirements, and to make special efforts to instruct the people both as to what was necessary to be done, and the relation between their own neglect and the sickness they were suffering. The ever present condition of these houses is impure air, and one or more of its familiar causes is not far to seek.

The especial object of this inspection was stated to be "to bring the tenement house population, their condition and habits under the observation and influence, in a sanitary sense, of the physicians, Inspectors of the Board of Health." The aggregate of these inspections and re-inspections is 6,188.

In view of the foregoing explanations it will be seen that much of this work did not require complaints to be made to or action to be taken by the Board.

Professor Parkes, (Practical Hygiene, page 323) says "whoever considers carefully the record of the mediæval epidemics, and seeks to interpret them by our present knowledge of the causes of disease, will, I believe, become convinced that one great reason why those epidemics were so frequent and so fatal was the compression of the population in faulty habitations. * * * We must look to simple, familiar and household conditions to explain the spread and fatality of the mediæval plagues."

The Report of the Metropolitan Board of Health, 1869, shows that in 14,872 tenement houses, live 468,492 of the population of New York City, 49.72 per centum of the whole. In that year the per centage of total mortality on total population was 3.46; the per centage of deaths in tenement houses and public institutions on total population was 2.39. The deaths from the class of diseases called zymotic and which included the diseases caused by filth, human crowding, contagion, &c., the diseases commonly known as preventable, were in tenement houses as compared with private houses as 2 to 1, taking equal numbers of inhabitants. There was a particular portion of the inhabitants, about one eighth part, who suffered three-quarters of the mortality. They were a a dependent, helpless class, and suffered accordingly. This segment of the population were the children, under 5 years of age, and their share of the total mortality from all causes was a little more than one-half.

Mr. Simon says, "it cannot be too distinctly recognized that a high local mortality of children must always necessarily denote a high local prevalence of those causes which determine a degeneration of the race."

One-half of the entire zymotic deaths of the year occur in the hot months, a concentration of the causes of disease and a mortality which assume every year the proportions of a plague. But it is not an imported plague. The pestilence is home-bred, its conditions are present, known, and every year, with the extraordinary heat of our summers, comes the recurring experience of a high rate of mortality. If the particular plague bears a foreign name, as cholera, it more distinctly signalizes the local in sanitary conditions. In the cholera of 1866, in Brooklyn, more than one-third of the cases occurred in one ward, the 12th, and three-quarters in five of the twenty wards of the city. And certain blocks were selected. Thus, in the 6th ward there were eighty-seven blocks, but the sixty-five cases of cholera were confined to twenty-seven blocks. In the summer of 1873, were two cases, Asiatic cholera in every circumstance, save one, namely, that they originated here, and in a block of the 6th ward visited by cholera in 1866. In June, of that year, at No. 13 State street, occurred suddenly three cases of disease, two of which were speedily fatal, which justly excited public alarm. The Sanitary Inspector, Dr. Colton, in his detailed report of his observations of the disease and investigation of the circumstances and antecedents of the persons, says, "The sudden onset of the attack, the character of the symptoms, their marked abatement, excepting the vomiting and purging, the character of the vomit, the sudden relapse followed promptly by death, was certainly enough to excite the suspicion and fear that the case had been one of yellow fever. If its origin could have been traced to the usual sources of this disease, at least in this climate, there would seem to be little doubt of the diagnosis. This important element was totally wanting. The closest inquiry revealed no clue to any connection having existed between the diseased and any infected ship, cargo, person or clothing. It is possible there may have been this connection—I have been unable to discover it, though I have extended the investigation to his place of employment in New York." The section in which the above sickness has occurred is one of the most filthy and populous portions of the city. Tenement houses, crowded with the poor, the ignorant and unclean, make it a centre to which disease is indigenous, and where any disease is likely to and does assume its worst form. Within a few days two more persons were seized with a similar fever, one of whom died. Besides the symptoms already narrated, all had renal complications, namely, albumen and casts. The disease developed in no other persons, but an investigation of the history of the house and block was instructive. From the physicians ordinarily in attendance upon the sick here, I learned that the place was notorious for its excess of sickness.

Dr. A. N. Bell, the editor of the "*Sanitarian*," who kindly complied with my request to visit the premises, writes me, "In the summer of 1858 or 1859, while engaged in the preparation of an address on "Sanitary Reform," soon after delivered before the Kings County Medical Society as an anniversary oration, I visited a row of four or five houses known as "Blake's Block," on the north side and near the foot of State street, which I found filthy in the extreme and tenanted by the worst class of people. Noticing a particularly foul odor in the basement tenement of one of these houses, which appeared to come through the cracks of a board floor in a state of decay, and wishing to see the worst, I descended to the cellar, first having to draw a nail to get the door open, it being nailed up, the tenant informed me, lest the children should get drowned in the cellar. I carefully descended a rickety stairway to near the bottom, and with a stick

measured the depth of the mud. I forget now how many inches deep it was, but more than a foot, and extremely offensive. It was the same house in which you called me to examine a case of fever, and which, as I remarked to you, I had no reason to think had ever been cleaned, or untenanted during the interval. It would be much more satisfactory to me if I could find the address giving the account of my first visit, some fifteen years before the second, a little more in detail."

That is interesting and convincing testimony. In a locality whose insalubrity is historic, to day, a disease indigenous to a climate where a tropical heat and moisture give an intensity of virulence to the decomposition of organic matter, appears, but it is only another disguise of the filth-diseases, one of the zymotic class which has prevailed before and always, so that fifteen years ago Dr. Bell, a private physician, not making official inspections, but making observations for a scientific paper before a learned society, finds in this very house his best illustration of the necessity of "Sanitary Reform." It continues to serve as an illustration of the inexorable connection between cause and effect in the domain of disease and death, and to confound the argument, which meets every effort for sanitary improvement in one form or another, that dirt is healthy.

Complaints and specifications of violations of the "Tenement House Act" were made by the Inspectors against this and many other houses in the vicinity, and under orders of the Board of Health improvements were made. Many other tenement houses in the city to which attention has been especially called by sickness, complaints of citizens or in other ways, have been made to conform to the law, but a large work yet remains to be done under the provisions of this most righteous and necessary enactment. Owners and builders and occupants of tenement houses are all interested in the requirements of this law, and for general information the Board has caused to be printed and distributed the statute. It is entitled "An Act for the regulation of Tenement and Lodging Houses in the Cities of New York and Brooklyn," chapter 908. Passed May 14, 1867.

The localization of preventible diseases in tenement houses and the necessity of continued sanitary inspection of them is further illustrated by diphtheria. Its history in the last nine years in Brooklyn records deaths as follows:—In 1866, 77; in 1867, 101; in 1868, 133; in 1869, 139; in 1870, 70, (not complete); in 1871, 157; in 1872, 184; in 1873, 252; in 1874, 521.

Note the slow but persistent increase from year to year, the general moderate increment until the last year when the increase was more than 100 per centum and marked a stage of epidemic intensity, which has carried and will still further carry the dreaded disease from its first limited and prepared fields among the neglected tenement house population and in houses situated on undrained and filled-in ground, to the most salubrious quarters and among the best conditioned inhabitants of the city, who thus and in many other ways are taught that the means to be employed to protect themselves from zymotic diseases, and the time and place for action are to be mindful of the sanitary interests and the homes of their poorer neighbors.

The prevalent sanitary evils found on inspection of the 465 houses, in which deaths from diphtheria occurred in the last year, were offensive water closets, privies and cesspools, house pipes untrapped, leaking, &c., cellars, wet and filthy, open drains and sewers, bad ventilation, filthy yards and outbuildings, as stables, &c.

In view of the approaching hot and sickly season, the Board on the 31st

May, 1873, employed six physicians for temporary duty as Assistant Sanitary Inspectors. The death register of the previous year, when the death rate of Brooklyn was high, 31.88 to each one thousand persons living, was studied to guide in the selcetion of localities where inspcetions should be made. It was found that a very significant difference in the death-rate of the several wards of the city existed. In the Third (old), Seventh and Twentieth wards, the rate was respectively 19.23, 20.38, 21.59, while in the Sixth, Twelfth, and Eighteenth it was 36.85, 36.76, and 41; but in the Sixteenth the rate reached its maximum in nearly 60 deaths to each one thousand of population. Moreover, certain streets and portions of streets were found to be what is called "*death thoroughfares*," and there the Inspectors began their labors. These additional Inspectors were employed during the hot weather, and as long as the funds at the disposal of the Board of Health would permit. Their services were valuable, and the apprehended invasion of cholera which was approaching from the South and West, gave impulse and interest to all the work undertaken by the Board.

All the Inspcetors in the service of the Board could have been well employed in visiting dwelling houses alone, but other important matters claimed an increasing share of the time and attention. In July, the Board of Health adopted and published the Sanitary Code. All its provisions were taken from the Sanitary Code of the Metropolitan Board of Health, and had been adopted in 1870 by the Common Council of the City of Brooklyn among its health ordinances. It was a violation of these ordinances, (Sec. 81) to use garbage, street manure, or any putreseible substance to fill up grounds. The Sanitary Commitee reported to the Board that houses were built upon such filthy lots, and that the families inhabiting them suffered a high death-rate.

A determined and protracted effort was made to prevent the further violation of the ordinance. As it was the general practice of families in the city to mix ashes and garbage, (in the summer, of course there was a great preponderance of garbage) the persons employed by the city to remove them, took the mixed ashes and garbage (and mixed them when found kept in separate vessels) and dumped them both together where their contracts to fill lots called them. The Inspectors followed the carts, watched the dumps, (swine, goats, and cows led the way to them) and accumulated the legal evidence of the violation of the code. Then sworn complaints were made before the courts. Trials and adjournments took place. When it was judged that the time of the Inspectors ought to be no longer employed, the aid of the police was sought and arrests were made of persons in the employ of the contractors, who were found in the act of depositing their loads of garbage in violation of the ordinance. It has been made difficult to continue the practice and the result has been, the separation and separate removal of ashes and garbage are for the first time in Brooklyn objects of municipal regulations and appropriations.

The code required on the part of the persons employed by the city to clean the streets, a prompt and cleanly performance of their work at stated intervals. But it was a very common thing for the Inspectors to report streets neglected for weeks and months, and the street dirt when scraped or more rarely swept up into heaps, to be left and again distributed by the street travel or by the winds. The Inspectors were much employed in establishing a legal basis for change and improvement. On the whole the degree of success in the manner of street cleaning has been encouraging. It is a more common event now for the street contractor to be seen carrying away in his cart the street filth he has heaped up.

Important sections of the code were founded on the law of 1864, "to prevent the adulteration of milk and the traffic in impure and unwholesome milk." The stables and grounds must be well drained, have ample space and ventilation, be kept clean and wholesome and the animals must not be fed on any unwholesome food, and the feeding of distillery swill and grains (brewer's refuse) in a state of fermentation is prohibited. The reports of the Sanitary Inspectors show that contrary to law, and in violation of the Sanitary code, an extensive swill-milk business is carried on in Brooklyn. With one prominent exception the cow stables are small; 1672 cows are kept in 168 stables. The largest number in one stable is about 200. A very large number have 6 or 7, or less. Swill fed cows are found crowded in dark, small, old hovels, undrained and filthy, standing in the worst locations and kept by men of corresponding qualifications as producers of infant food. In the reports of the Sanitary Inspectors appended to this report will be found some details of the time and labor given to the supervision of these stables and the impracticability of such frequent inspections as would have to be made to compel the men engaged in this business to conduct it as required by the Sanitary code.

Section 50 of the Sanitary code makes it unlawful to keep swine in the City of Brooklyn. In certain quarters of the city pig-pens were numerous. Always filthy and offensive, the garbage on which the swine were fed equally so and often taken through the streets in open, leaking hand and goat carts,—the whole business was a nuisance. But it was to very many poor families a business and important means of support. 430 orders for the removal of these pens were issued; months of delay occurred; the pressure of repeated inspections was maintained, and in the early spring, under the coercion of the courts, the entire discontinuance of this offensive business was effected.

The nuisance of goats at large was the subject of much complaint from citizens. Not to take space to report what has been done to abate this nuisance, I think it important to say that from various causes nothing was accomplished and the experience gained in the efforts has convinced me that this matter must be controlled by the common council.

The importance of the sanitary condition of the public schools is manifest. During the winter months of 1873–4, the Inspectors were employed in a careful sanitary survey of the schools, with reference to location, drainage, sewerage, heating, admission of light and air, air-space, condition of air, degree of crowding, prevalence of contagious diseases, &c. Reports were made by the Inspectors of each one of the 49 district, or counting each grammar, intermediate and primary department a separate school, the 98 schools of the city. 136,769 scholars are in attendance in the course of the year, about one-third of the population of this city, of the ages when the body is forming and formed as well as the mind. The Board of Health communicated an abstract of the facts developed in this important inspection to the Board of Education, (see minutes of the Board of Education, 3rd March, 1874.)

I add the following summary, to the foregoing brief explanations, of the work performed by the Sanitary Inspectors during the period included in this report:—Inspections, 27,034; re-inspections, 14,550; total, 41,584. Complaints, 9,499. Special reports, 287. Investigations of causes of contagious diseases, diphtheria, &c., 646.

The reports of the District Sanitary Inspectors show the nature and extent of their work, the important matters which have occupied their time and attention, and the convictions which grow in the minds of edu-

cated medical men, occupied with the official care of the public health, and in daily personal contact with the conditions dangerous or detrimental to it.

Of the 176 sections of the Sanitary Code, 34, namely from 85 to 117, inclusive, are prohibitions of filth and dirt in their elementary forms as found very much the same in African villages and in the unimproved quarters of the great cities of enlightened peoples. Filth in cellars, yards, and stables, overflowing cesspools and privy vaults, broken and obstructed drain pipes, garbage deposited in the gutters, &c., are constantly recurring conditions and practices. For the prevention and removal of these common nuisances a Sanitary Police is invaluable. Without such supervision decent and comfortable living in the crowded quarters is not to be expected. Sergeant G. W. Rogers, of the Central Office Squad, has rendered constant, cordial, and efficient aid in enforcing the Sanitary Code, and has accomplished all that was possible for an intelligent and faithful officer to do with the small number of men under his command and the varied demands upon their time. The Sanitary Police, in the period included in this report made 22,695 inspections; 10,974 re-inspections; total, 33,669. Among these were 15,011 inspections of meat markets and slaughter-houses where 19,021 pounds of beef, mutton, veal, &c., were found unfit for food, condemned, and sent to offal dock; and 11,489 inspections of privies, cesspools, sewer-pipes and manure vaults.

Small pox was epidemic in Brooklyn in 1870–71, and first two quarters of 1872; in the first quarter 1,068 cases and 408 deaths were recorded; in the last two quarters there was a decided decline. The first two quarters of 1873 showed a considerable increase, and the last two were marked by a freedom from the pestilence which the city had not experienced since 1869; only seven deaths were reported in the six months.

In February, 1874, the rate of increase was so great that it was evident the contagion was still in our midst, and inquiry directed to the tenement house population, showed that of the infants two years of age and under, born since the alarming prevalence of small pox in 1872 69 per centum were unvaccinated. In November, it was apparent that the 17th and 14th wards were threatened with an epidemic. The efforts of the vaccinating physicians employed by the Board had been directed to the protection of the people in the houses and blocks where small pox appeared; now house to house visitation in these two wards was instituted and convenient vaccinating stations were opened where the people could come in the evenings. The general alarm in the 14th ward, and the co-operation of the clergy has caused the station in this ward to be an entire success. The repeated visits of the physicians to the houses of the people have produced confidence; on their first visit their services are refused in many cases, but in the end very few, if any, remain unvaccinated. The guiding principle of our work has been, when a person accepts our vaccination, to insure by repeated re-inspections, and re-vaccinations if necessary, protection as the sure result. Vaccination looses credit if our vaccinated children take small pox the same as the unvaccinated. Often the first vaccination is unsuccessful. But by repeating the vaccination one or more times, some of the vaccinating physicians report a rate of only 1 failure to every 243 primary vaccinations.

These repeated visits also enable the physician to watch the progress of each case, and in the event of undue inflamation, eruptions, erysipelas or other accidents, to give necessary care, allay alarm and prejudices and inspire proper confidence. Our experience shows that when we have gained

the confidence of the people we need no compulsory vaccination law to secure general vaccination, while all the public alarm attending the prevalence of the pest, will not avail to make vaccination offered by an official, a stranger, acceptable to many, even occupants of the very houses in which cases of small pox are in progress.

The end to be reached is to prevent by a public service small pox among the population in defined quarters of the city,* dependent upon the public physicians, even as it is now in other quarters of the city prevented by the care of the family physicians. Costly epidemics are sure to occur at intervals of a few years among an unvaccinated population,—the intervals for the last three-quarters of a century in New York City, owing to its exposure to contagion from abroad, not exceeding three to five years,—a less costly constant public vaccination service carried out by a selected and trained corps of vaccinating physicians, working each in his own district, among, for this purpose, his own families to whose confidence he is commended in precisely the same way as any family physician, and reaching every infant within at least six months after birth, is for this city, the only safeguard worth a moments consideration.†

Respectfully,

B. A. SEGUR,

Sanitary Superintendent.

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* The 16th ward had 6 per centum of the population, and 509 deaths, 30 per centum of the total mortality. In seven of the twenty-five wards 973 deaths or 66 per centum of the total mortality from small pox occurred.

† A very inadequate statement of the cost of the recent epidemic is the official expenditures, as follows:

1st. The Board of Health expended about $50,000.

2nd. Coroners' fees, (deaths of concealed cases) $3,612; add to this

3rd. Cost of maintenance of 2,065 cases, removal to small pox hospital, and the unknown cost of sickness of 5,140 reported cases, a private charge, with the disturbance of industry and business.

SANITARY INSPECTION DISTRICT.

REPORT OF F. H. COLTON, M. D.

DR. B. A. SEGUR,
Sanitary Superintendent.

SIR.—I herewith submit the following annual report. My sanitary district has had varying limits since the organization of the Board, but at present comprises the 1st (old 1st and 3d), 6th, 8th and 12th wards, together with the docks and shipping along their water front. Of these the 8th ward has none, but in the others is located the bulk of the warehouse and shipping interests or the city.

GENERAL CONDITIONS AFFECTING MORTALITY.

To discover and remove preventable causes of disease, to lessen mortality and lengthen human life, is the avowed object and end of sanitary labor.

The following vital statistics suggest at once the sections of the district which always have, and do still demand the greatest attention.

The Registrar's Report for 1873, shows that, in the old 1st ward, sixteen (16) persons of every thousand died ; in the old 3d ,twelve (12) ; the 6th, thirty-one (31), or about twenty-four (24), not including the three hospitals ; and in the 12th, twenty-eight (28). Reference to the mortality record of previous years shows, that, with more or less constancy a similar relation of deaths, per thousand inhabitants, has been maintained. So this relation is no accident, but depends on certain persistently operating causes. Among these are the nature of the soil ; the efficiency of drainage and sewerage ; the character and habits of the people ; the kind of houses in which they live ; the food they eat : even the clothes they wear—these, and other conditions, physical, mental and moral, serve to fortify or weaken a community against the inroad of disease. And with these must be remembered the fact, that, where one condition is present to operate, whether it be to build up or destroy, others are inseparably linked with it, and intensify its force. Thus, for instance, the scanty means of the poor crowd their dwellings out of the most salubrious localities, into others where land is cheaper because poorer ; cause them to be built at the least possible expense, with the fewest possible provisions for conserving health ; and reduce the expense of living further, by making the cubic space, adequate for a single family only, suffice for several.

The same cause compels hard labor, but, perhaps, furnishes a midday meal of bread and tea—it provides improper food to generate animal heat and insufficient fuel and clothing to conserve it ; it hinders education and forbids an enlightened intelligence as to the laws of hygiene

and how to apply them; and this ignorance, again, brings to naught much well directed sanitary labor. It is of little use to provide transom windows for a dark bedroom, or a ventilator for the roof of a tenement house, if, with the first chill of winter, the window will be closed and sealed, and the ventilator stuffed with last winter's hat. Here, then, is a whole chain of conditions, to which others might be added—all naturally linked to the first—which tend to deteriorate and shorten the life of a great proportion of our city's population, as well as to perpetuate this deterioration in the children born among them. It may be safely said that all these conditions are constantly operating throughout the greater portion of my district. The vital statistics quoted above, are thus, in a measure at least, to be explained. And now, analyzing them more closely, it will be found that it is the preventable causes of disease which give them many of their striking contrasts. Taking the four more prominent zymotic diseases—scarlatina, diphtheria, croup and cholera infantum,—there were from these causes, respectively, in the old Third Ward, 1, 3, 1 and 7 deaths; while in the Sixth Ward, there were 21, 29, 18, and 55 deaths; the ratio of population being a little more than 1 to 3. The same causes operating in the Eighth ward, which has a population a little less than the Third, caused 26, 6, 15 and 35 deaths; in the Twelfth ward, with double the population only, 15, 23, 38, and 60 deaths; the aggregate in the four wards from these four diseases, being respectively, 12, 123, 82 and 136.

Prominent among the contributing causes to this result, as I believe, are the drainage and sewerage of the different sections. No section of the city, probably, has had its original contour less modified, in the construction of streets, and preparing it for habitations, than that comprising the old Third ward. There were no hills to be removed; no low places to be filled with street and house refuse; no ponds to be soaked up; no water courses to be interrupted; and its area was not enlarged by encroaching upon the waters of New York Bay. It held an elevated site, with a deep, dry soil; at the same time, sloping sharply in two directions and slightly in a third, surface water could not become ponded, but was conveyed promptly outside its borders. Its streets were early sewered after the introduction of the system of sewers into the city, which more completely provided for surface drainage.

In striking contrast with this, in some or all respects, is each of the other wards of my district, though the old First presents it less, perhaps, than either other. A glance at the map on which are outlined the original water front, the old water courses, the location of ponds and marshes, in the First, Sixth, and Twelfth wards, will show how large sections of these were formerly *wholly unhabitable*, where now dense populations cover them all. In the south west corner of the First, beginning a little below Joralemon street, the water line penetrated nearly to Willow Place.

In the Sixth ward, all west of Columbia street, was either water or a marsh, with here and there a little spot, designated on the map as an island. At one point, between Harrison and Degraw streets, what was known as Cornell's Pond, though really an outlet to the sea, penetrated

almost to Hicks street. Much of Hicks street itself required to be "built" in order to meet an established grade.

The section comprising the Twelfth ward was virtually a single marsh, or a part of the bay, and much of it is an unredeemed marsh still. Low and flat, with no natural drainage and, until lately, scarcely an attempt at artificial drainage, it holds on its shallow, soggy soil, twenty thousand inhabitants. So-called improvements were a travesty on the word. Highways were constructed of the vilest material, and no provision was made for draining the intervening basins. Water fell into and was held by them; polluted by stagnation it polluted the air by evaporation, carrying with it the products of vegetable and animal decomposition. Gradually, as it became desirable to prepare these lands to be built upon, the ponds were filled in and the water was put out of sight simply, with deposits similar to those which had formed the streets. It was a system of *soakage*, not *drainage*, by which a foundation was made for the homes of thousands. If one should propose to remove water from a bucket by putting sand, or other porous substance into it, the absurdity of the proceeding would be apparent at once; and yet this is precisely what has been attempted on a grand scale, not only in the Twelfth ward but in many sections of the city—with this difference, however, that instead of clean earth, the deposits have been full of organic matter, active to generate miasms of the most poisonous kinds. The lower end of Van Brunt street, from Elizabeth street to the bulkhead, was recently excavated for a sewer-extension. An opportunity was thereby given to observe both the natural and artificial geology. For a short distance the soil was homogeneous-pebbly, sandy and clean. Evidently this had been the former beach; but soon it abruptly changed to a stratified soil, though not one known to geological science. There was a thin layer of sand, which is always the finishing coat of a new street, whatever may be hidden beneath it; then a stratum of ashes mixed with house-refuse, and beneath that, as a foundation, a heavy stratum of street muck, apparently taken from the high ways of the ward. About four years ago, very extensive sewering was done in this ward. Van Brunt street was opened nearly its whole extent, and many of the cross streets at right angles with it. Malarial fevers, of various types, at once became very prevalent, and continued so the entire season. I was personally cognizant of the fact through my connection with the Long Island College Dispensary. Repeatedly, the entire hour of service there, on any one day, was devoted to examining and prescribing for these cases of fever from the Twelfth ward. This was only an aggravated experience in that section, from one of the morbid influences which are always at work there, and wherever there is a like soil. What wonder, then, that in the mortality roll of the year, such sections occupy a large space? The influence of the Board of Health cannot but have been salutary in correcting, as in some measure it has, the fatal method of land-improvement hitherto adopted. But only by undoing the mistakes of the past can a radical remedy be applied—a work almost too stupendous to be hoped for or contemplated.

The imperfect drainage of the Eighth ward has made it, time out of mind, the familiar home of malaria. The very improvements of the ward

have contributed in some respects to aggravate the evil. Great changes in the surface grade have been required to bring the streets to an established grade. Hills have been cut down, low places filled up, and the ridges forming the streets have been so many barriers to a drainage already imperfect. Sewers have been constructed as yet, in less than half the ward, (from Prospect avenue to Twenty-seventh street), while those in operation have their common outlet at the foot of Twenty-seventh street, through a dilapidated wooden shute, into shoal water, where the sewage lies almost a stagnant pool, evaporates and floats back its offensive gases over the land.

I have dwelt thus on a single sanitary feature of my district, in order to give special prominence to what seems to demand special attention, if the high death-rate, which prevails in it, is to be reduced. The other factors are not, however, to be kept out of mind, or dwarfed of their real importance. Prominent among these are the tenement houses and the character of the people who inhabit them. Here again is to be noted the fact that the Old Third ward is almost entirely free from this class of dwellings. The Old First ward has not a large proportion of these, but some of those it has are of the worst in the city. They are located chiefly near South and Fulton ferries. In the Sixth ward, between Hicks street and the water, the bulk of the dwellings are tenement houses. The population of the Twelfth ward is divided between tenement houses and shanties.

With the dwellings of the Eighth ward I have not become so familiar, but there are a great many tenement houses on Third, Fifth and Sixth avenues, though no very large ones. In fact the bulk of these houses, throughout my district, contain only from four to eight families; a few have ten or twelve, and here and there is found one with even more.

During the existence of the Metropolitan Board of Health, all the houses of this class were thoroughly inspected, and made to conform to the law relating to them. The good results of that inspection have been more or less permanent, not only as regards the houses then standing, but as affecting the character of those built since. Then hundreds of dark bedrooms required to be better lighted and ventilated, while sewer connections were very rare; whereas now, transom windows and sewer connections are provided as a matter of course. Better care, also, is taken of this class of property on the part of owners and agents. A vigilant health organization has been an education to them, which, though many were slow in acquiring, and are still far from proficient in is still a lasting good to them and to the city. There are landlords, I know, whose rapacity makes them blind to their own interests and the welfare of their tenants; who are inexorable on rent-day, and unapproachable at any other time; but observation convinces me that the traditional landlord of this class is more seldom found than formerly.

Cases where landlords are non residents, or have no responsible agents, or property is in litigation, or where owners, from habits of personal sloth, are indifferent to cleanliness under any circumstances—these are the cases which give the most trouble. The greatest difficulty, however, is with the character and habits of the people who live in tene-

ment houses; here lies the greatest hindrance to a thorough sanitary reform. Many of them cannot, or will not, learn that a sewered vault is no place for the deposit of ashes and garbage; that these substances should never be put in the garbage receptacles; that the street is a highway for travel and not a depository for house offal; that ventilators and airy bedrooms are designed for their good and not their harm; that pure air and cold water are not harmful but helpful.

Disease and death are born of the ignorance and sloth which find a familiar home in tenement houses. It is the young life, especially, which they attack, and hecatombs of dead babies, in Summer and Winter, testify with what fatal effect. How to correct the modes of living among the ignorant poor is a problem demanding the wisest thoughts of the wisest minds, because this would be to reach the roots of the fearful mortality among them. Tenement house laws and health ordinances have their place, and should be enforced, but these only reach the border-land, as it were, of the difficulty. Within the apartments where the family life goes on, is where the laws of health are really broken.

It is here, I conceive, that a health officer finds his most important function. It is his, by repeated visitation, by wise suggestion, by personal influence, by creating the conviction that he is a friend, so his coming will be welcomed and his advice heeded—by all these, and any other means at command—to reach, impress, and control the minds of the ignorant masses. A single example will serve to illustrate. I was called, recently, to visit a house where two cases of diphtheria were reported, one of which had already proved fatal. The rooms were filled with an intolerable stench; fresh air was being vigilantly excluded, though the weather was not cold; the floor was grimmy with uncleanliness: the bed linen had been long unwashed; an old water-pail and *pot de chambre*, each half filled with excrementitious matter, were emitting the foulest odors, and in the midst of all was the little sufferer, half clad and dirty, who died two days after. The parents were sober people, and the father was in steady employment. Their wretched home came, apparently, from an ignorance of the first laws of health, for the result of my visit was, that on the following day I found the floor clean, the walls whitewashed, and the air pure. This is an extreme case, no doubt, but to a greater or less degree, thousands of houses in the city for a like reason, are filled with a like unwholesomeness. The matters too, of food and fuel, of sleep and clothing—each important factors in the maintainance of health—*influence*, not *law* can do much to regulate. Thus it is that a Health Officer may find much to do, besides reporting to the Health Office, what its executive arm can reach, or remedy.

The number of tenement houses has been considerably increased in my district since the organization of the Board. They are scattered through the different wards excepting the First. The greatest number have been erected in the Sixth ward. Between twenty and thirty have been built on the south side of Hamilton avenue between Columbia and Henry streets; they are of brick, three stories high, and designed to accommodate from five to six families; they are on water-soaked soil, which is but a little above tide-level, though given an artificial depth by

the deposit of two or three feet of sand. The drainage is poor; of sewerage there is none. The house drainage is conducted to the street gutter or the marshy flat in the rear. Several fatal cases of diphtheria have occurred in this block during the recent epidemic. Hamilton avenue, at this point, is unsewered though greatly needing the improvement. It is questionable, however, how efficient the sewerage of premises could be made, there not being sufficient fall from the yards to the level at which the street pipes would require to be laid. While house water-closets, would be wholly out of place with the class of tenantry these houses contain.

There has been but a limited extension of sewers in my district during the last eighteen months, and, in fact, in a large portion of it, but very little is needed. In the First ward the system is already perfect, as also in the Sixth, excepting short sections of a few streets. Of these only two would be much benefitted by a sewer, viz.. Congress street between Columbia street and the river, and the section of Hamilton avenue mentioned above, (this avenue being the dividing line between the Sixth and Twelfth wards.)

The sewer extensions have been as follows: A small and very inadequate sewer, at the foot of Van Brunt street, has been replaced, through private enterprise, by a conduit 30 inches in diameter, from Elizabeth street to the bulkhead. Two blocks on Van Brunt street, between Partition and Elizabeth, together with the cross streets which intersect this portion, remain unsewered, though the improvement is very much needed. The Henry street sewer, which formerly terminated and discharged its foul current among the shanty population just below Hamilton avenue, and thence sluggishly found its way to tide-water, was in process of extension, several hundred feet southward, to open water when the closing in of Winter caused a suspension of operations. This, when complete, will give great relief to a considerable resident population, as well as those passing along the avenue. Another small section, near the junction of Court street with Hamilton avenue, has received great and long needed relief, by the extension of the sewer in Court street, from Garnet to Bush street, a distance of two blocks. In addition to house sewage, which it will convey away, it will provide for considerable surface drainage, which, hitherto, has fed a very offensive pond at the junction of Court and Centre streets. The system of sewers has not been extended at all in the Eighth ward since the organization of the Board; their present limits have been indicated in a previous portion of this report.

The subject of garbage collection is one of common interest to the whole city, and presents nothing, perhaps, for consideration in a district report.

The partial reform in the methods of collection through a separate service from the ashes, on distinct days, and in covered vehicles, so far as this has been accomplished, has been an advantage to my district, as, no doubt it has been to others. Except in tenement houses, garbage is now very generally kept separate from ashes. In these sections, however, the habit of mingling them, or throwing the garbage in the street, is almost as common as ever. It is here that sanitary regulation is most difficult, while it is the most necessary.

In Boston, where the garbage service is well-nigh perfect, the health authorities have been unable to prevent the mingling more or less, of these substances. The practice of depositing garbage in the streets has been broken up there through the active coöperation of the police. Arrests are made, and fines imposed on those found violating the ordinances in this regard. A regular, efficient garbage service, and a coöperating police would do the same for Brooklyn as for Boston. As it is, such streets as State, Columbia, Carroll and Van Brunt are often, and especially in winter, a disgrace to a city which claims any interest in its own cleanliness and salubrity.

A year ago a general and careful inspection was made of all the public schools, and a report of the same presented to the Board. There were at that time five in my district, viz: Nos. 8, 13, 27, 29 and 30. Aside from the common evil of crowding primary departments, the result of the inspection was, in general, favorable. The most important criticisms and suggestions I found occasion to make, concerned No. 8, in Middagh Street, First Ward, and No. 30, in Wolcott street, Twelfth ward.

No. 8 I found very deficient in light and outside circulation of air; without a proper play-ground, and with a very defective arrangement of water closets inside the school-building To remedy these evils, I suggested that the adjoining property on either side, be purchased and the buildings removed therefrom. Some measures have been taken to this end, since, but with what prospect of speedy accomplishment of it I am not aware. In regard to No. 30, I recommended that the old privies should be removed and new ones constructed, properly connected with the sewer, and, also, that certain small apartments at the top of the building, used by the "Kinder Garten" branch, so called, of the primary department, should be abandoned as school-rooms. The sewering was done during the last vacation. The "Kinder Garten" is still maintained in its original quarters, with all their original unfitness for the purpose.

During the latter portion of the year 1874, diphtheria has been epidemic in the city, and has visited, with special severity and fatality, a part of my district, namely, the Sixth ward. 580 deaths have resulted from this cause throughout the city, during the year, of which 217 were in my district, distributed as follows: First ward, 28; Sixth, 131; Eighth, 24; Twelfth, 34. Though giving much thought to the problem, I have been unable to discover any law governing this distribution, or to explain why the Sixth ward has been so great a sufferer.

In general it is true, that the favorite haunts of the disease have been among tenement houses, and many of these stand upon artificial and poorly drained soil. Nearly two-thirds of all the deaths in the First ward, occurred in the little section bounded by Joralemon, Willow and Atlantic streets and the river; and in the Sixth, *nine-tenths* were west of Henry street, both of which, it will be remembered, are tenement house sections.

In the Eighth ward the deaths were more evenly distributed. The same is true of the Twelfth, excepting one street, Hamilton avenue, which has *one-third* of all the deaths marked against itself, and

a single block answerable for *all but three* of these. But the whole of the Twelfth ward is poorly drained, and it would not be a great error to say, it is all made ground, while the bulk of its populae tion live in tenement houses. Why it should have had but 35 deaths from diphtheria, while the Sixth had 131, it is not easy to determine. The very slight prevalence of the disease along the streets, which ar- all on unimproved marshy ground, only makes the puzzle more puzzling. May not the special influence of contagion throw light on the point? There are some facts which seem to confirm that view, as, for instance, this; in the Sixth ward there were fifteen (15) houses which had two deaths (2) each; one (1) which had three (3); two (2) which had four (4); while in the Twelfth ward only four (4) houses had more than one death, and three each had two (2). And then again, the march of the disease along a street bears upon the same point. The following is the record of Hicks street, for instance, deaths occurred in Nos. 340; 355, 362, 367, 369, 382, 402, 484 (2 cases), 493 (2 cases), 526 (2 cases), 552, 558 (4 cases), 574, 643. To argue thus, however, involves another problem, viz.; why is this special influence of contagion more potent at one point than at another? Other streets might be mentioned to illustrate the same thing. Since the epidemic became alarming, a thorough inspection has been made of every house where a death was reported from diphtheria.

In very many instances (nearly one half) local conditions have been found tending to render the air of dwellings impure and unwholesome. These have chiefly related to imperfect house drainage and sewerage. Leaking soil-pipes and untrapped waste-pipes, allowing sewer gases to escape into cellar, hall or dwelling-room, have been repeatedly discovered. The following are a few of the more aggravated instances of this kind: No. 65 Columbia Place, tenement house, soil pipe broken, cellar floor and ground in the vicinity of the leak saturated with filthy fluids, cellar filled with sewer gases; family occupying first floor lost five children by diphtheria. 63 Summit street; tenement house; sinks in dwelling rooms on each floor; no traps; sewer gases very perceptible; soil-pipe in cellar had eight holes in it, made at various times for the purpose of removing obstructions, and left unclosed; four deaths occurred in this house. No. 78 Hamilton avenue; tenement house; a pool of sewer water in cellar from leaking soil pipe; several deaths from diphtheria on first floor. No. — Sackett street, waterpipe from sinks on each floor entirely disjoined from soil-pipe in cellar, and cellar made into a cess-pool in consequence. The landlord occupied a portion of the house himself, but was wholly unaware of the above conditions, though I became satisfied that they had existed a considerable time. His wife at first discouraged my investigation, saying it was quite unnecessary; that "everything in that house went on like clock-work." This case well illustrates the carelessness of some householders in matters affecting house drainage.

The soil, crowded populations, local but remedial causes, such as indicated, together with the influence of contagion—itself f stered and strengthened by the unhygienic personal life and habits of those subject to it—these all must be considered, in connection with the etiology

of the recent epidemic in this city. The public schools have been suggested as being natural distributing depots of the poison. But the information I have obtained on this point does not confirm that view in the present instance. The Sixth and Twelfth wards, for instance, have each two of these institutions. Nos. 13 and 29, in the Sixth, and Nos. 27 and 30, in the Twelfth. From No. 13, three pupils of the primary department have died of diphtheria, during the present school year, though a considerable number have had sore throats. This, however, is true every winter. There have been fewer deaths from this cause this season than last. In No. 29 there has been one death from diphtheria, the pupil being from the primary department. There have been a number of cases of sore throat, but not so as to detain pupils from school. "The average attendance during the winter has been exceptionally full." In No. 27 one death has occurred thus far, since the school opened in September. No case has been known among the pupils of genuine diphtheria, though a number have had sore throats. In No. 30 one member of the primary department has died from this disease. The above figures, certainly, do not explain the facts. The spread of the epidemic cannot, it seems to me, be charged on the public schools. In fact, there is much need of study of the nature of this zymotic poison and the laws which govern its distribution.

All of which is respectfully submitted.

F. H. COLTON, M. D.,
Sanitary Inspector.

SANITARY INSPECTION DISTRICT.

REPORT OF J. H. RAYMOND, M. D.

District bounded by Fulton Street, City Line, Prospect Avenue, Gowanus Bay, Court Street, Atlantic Avenue, and Boerum Place.

B. A. Segur, M. D.,

Sanitary Superintendent:

Sir:—I have the honor to submit the following report upon the District assigned to me for sanitary work.

The Second Sanitary District includes the 3d, 9th, 10th, 22d and 24th Wards, some of whose statistics, as compiled from the records of 1872, are here given for reference and preservation. As the 9th and 24th Wards are new, I am unable to give any of the statistics of them:

Wards.	Population in 1870.	Deaths in '72.	Ratio of Deaths per 1000.	Area in acres.	Area in sq. miles.
3d & 10th (old 10th)	34,613	923	26.66	535.21	0.835
22d	11,803	358	30.33	1144.51	1.787

The general character of the population is good in a sanitary point of view; for, though there are some localities where the people have little or no regard for cleanliness, either of person or premises, yet these are very circumscribed, and can, without difficulty, be kept in good sanitary condition. The only exception to this broad statement is to be found in cow-stable localities, but as this is considered at length in another part of this report, I shall at this time make but this brief reference to it.

There has been but little small-pox in the district, and thanks to the efficiency and skill of the vaccinating and disinfecting corps, the disease has not in the same house, with two exceptions, gained a second victim; and in both these cases the disease was modified by vaccination. I desire to record my conversion to the plan which the Board has acted on almost from the beginning, namely, the quarantining of small-pox patients in their own homes, and removing them to the hospital only when it was inevitable. I did not at first coincide with this method, believing that in tenement-houses especially, no case could remain without infecting the other inmates; but I now believe that *thorough local vaccination and disinfection, with careful and systematic subsequent fumigation, are almost sure preventives against contagion*, and that the knowledge on the part of the people that the Board will not compel removal, will do much to prevent concealment of cases, and to allay the fears and anxieties of patients.

The question has of late frequently occurred to me, are we doing our whole duty to individuals when we vaccinate them, or should we repeat

vaccination until the lymph no longer takes effect? Instances are sufficiently numerous in the history of small-pox epidemics where, after an apparently successful vaccination, an individual contracts small-pox, and this too so shortly after vaccination that we cannot believe its protective influence has become lessened. What answer shall the vaccinator make to a mother, who, when urged to have her baby vaccinated, narrates an instance not only of small-pox after vaccination, but of a most virulent type, and followed by death? That there are such instances all must admit, and unless our belief differs from our practice, we must confess that vaccination is, in some cases, of no avail; and this too, when we consider it a successful vaccination. Do we, as physicians, make use of vaccine lymph as we do of other means employed to prevent or to abridge sickness? If a patient suffers with great pain, we do not content ourselves with administering opium in the dose and at the times prescribed in the Materia Medica, but we give it just as often and in such quantities as will produce the desired effect, namely, the relief of pain; we *narcotize* the patient. One of the most important therapeutical discoveries of this decade is how to use iodide of potassium. We have been prescribing this remedy for years, but only of late have we learned that if we would c ire our patients we must *saturate* them with iodide of potassium; and now drachms are given where formerly grains were prescribed. What, then, is the application of this principle to vaccination? If a case of small-pox occurs, all who have in any way been exposed to the disease, or are liable to contract it, should be at once vaccinated, and if "it takes" we should not consider the individual as thoroughly protected from small-pox, but should see in it an indication of his susceptibility to the small-pox poison, and should at once vaccinate again, and repeat till no effect is produced by the lymph; or if I may be allowed to coin a word to express the same idea, we must *Jennerize* the individual—that is we must saturate him with vaccine lymph. I know that there are those who will say that we virtually do this when we introduce into the human body a single vaccine germ; that this multiplies so rapidly that, in a brief time, the entire organism is brought under its influence; but if this is so, how are the following figures to be explained? Seaton, in his Hand-Book of Vaccination, says: "By observations, of unsurpassable interest and value, made for upwards of thirty years at the small-pox hospital (London), it has been demonstrated that the extent to which small-pox, if it should be contracted at all after vaccination, is modified by the vaccination, is determined by the character and the number of the cicatrices; that it is in the exact ratio of the excellence and completeness of the vaccination as determined by these tests. Persons whose vaccination has resulted in their having one genuine vaccine vesicle, and one only, are, as a class, much less protected than those who have had two, those who have had two than those who have had three, &c.; and the protection against fatal small-pox which is afforded by four or more genuine vesicles is almost absolute."

The subjoined table, giving the results of Marson's observations on nearly 5,000 post-vaccinal cases which occurred in the twenty years from 1836 to 1855 inclusive, will show, at a glance, the influence exercised on the course of small-pox by the character and number of the vaccine marks:

Classification of patients affected with small pox.	Number of deaths per 100, in each class, respectively.
1. Unvaccinated	35.00
2. Stated to have been vaccinated but having no cicatrix	23.57
3. Vaccinated.	
a. Having one vaccine cicatrix	7.73
b. " two vaccine cicatrices	4.70
c. " three vaccine cicatrices	1.95
d. " four or more vaccine cicatrices	0.55
4. Having previously had small-pox	19.00

That is, out of one hundred persons who had small-pox, never having been vaccinated, thirty five died; of the same number having it a second time, nineteen died; of the same number having it for the first time but having one good mark, nearly eight died, while of those who had four or more good marks, less than one person in a hundred died.

May I here be permitted to record a protest against the word *virus* as synonymous with lymph. Webster gives the following definition: "Virus, a slimy liquid, a poisonous liquid, poison; contagious or poisonous matter, as of specific ulcers, the bites of snakes, and the like." Is it any wonder that people object to having *vaccine virus* inserted into the arms of their offspring?

Scarlatina and diphtheria have been very prevalent in this district during the past year, and of a severe type. Dr. Williams, who has an extensive practice in the 22d Ward, believes that the malignity of these affections can be distinctly traced to the practice of depositing the contents of the 3d and 4th Avenue sewers upon the streets, and allowing them to remain there for several days. Although it might be difficult, or even impossible to designate a particular case, the origin of which could be directly imputed to this pernicious practice, yet if sanitary science has demonstrated anything, it is that such material as comes from sewers, that is from privies and stables, contains the efficient cause in the production of these very diseases; and the chemical examination by Prof. Jewett of the Adelphi Academy, of this material, innocently called *sewer sand*, shows it to contain ¾ to 1½ per cent. of nitrogenized organic matter, so that each cart load or ton contains from 15 to 30 lbs. of excrementitious matter. The exposure of this material on populous streets, and its subsequent use in the repair of tracks, by the Brooklyn City Railroad Company have already been acted upon by the Board. The result of this action is that the sewer sand after being removed from the sewers is not allowed to remain on the streets over night, though it is still deposited there during the day. This is an improvement over the old method, but still is not in harmony with the spirit and the letter of Sanitary Code. During the day the liquid portions drain off and saturate the earth of the streets so that much of the evil has been accomplished before night comes. It should be at once deposited in the carts which are to transport it away.

A most active agent in the propagation of the contagious diseases of childhood is, I am persuaded, to be found at work in our schools, both public and private. During the inspection of the public schools of my district I was surprised to find that while many of the children were detained at home with scarlatina, diphtheria, or measles, their brothers and sisters were at the same time attending school. In some instances I found, upon

investigation, that children returned to the school after convalescence clad in the same clothes they had worn during a mild attack of measles, without any attempt having been made to disinfect or render them innocuous. Convinced that such neglect must be fruitful in the propagation of these diseases, I compiled the following table from the records of the Register of Vital Statistics and the Report of Contagious Diseases:

1873 VACATION.	CASES.		DEATHS.	
	Scarlatina.	Diphtheria.	Scarlatina.	Diphtheria.
July	56	8	none	none
August	50	7	none	none
SCHOOL TERM.				
September	45	23	8	20
October	97	69	18	30
November	141	67	26	25
December	192	34	43	36
1874.				
January	184	81	40	29

I was surprised to find that during the months when the schools were in session the number of reported cases and deaths exceeded so much that of the summer months, that is, during vacation. I am aware that many children are out of town at this time, and that there is therefore less material for the spread of these diseases; but this table, imperfect as it may be, is well worthy of consideration.

These facts and figures, together with others equally striking, were reported by me to the Board of Health, and were communicated to the Board of Education. The committee to whom the communication of the Board of Health was referred offered the following resolution, which was, I am informed by the Assistant Secretary of the Board of Education, laid upon the table, and has never been adopted:

Resolved, That Sec. 16, Part 3d, of the Rules and Regulations of this Board be amended, by adding, "and when a child has been sick of a contagious disease, it shall not again be received into the school until accompanied by a certificate from its physician, stating that its sickness is no longer communicable."

Were it to become a part of their regulations we should in a short time be enabled to judge how much influence our schools exert in the propagation of contagious diseases. The opinions of physicians are so much at variance, as to the length of time at which these diseases of childhood cease to be communicable, that I would suggest the issuing of a circular to the medical profession of the city, giving the views of the Board upon this matter, and also directions for the destruction of all poisonous germs in the clothing.

A marked improvement has taken place in street cleaning in the 3d and 10th Wards. The custom of leaving the street sweepings piled up in the streets till the wind or wagon wheels had again distributed them, to be again swept up in piles and again scattered, is among the things of the past. I regret that in this improvement I cannot include the 22d and 8th Wards. As soon as this Board was organized, complaints were received of certain streets which were not only never cleaned, but which being used by contractors grading streets and blocks in the upper portion of the 8th and 22d Wards, to transport the dirt to low lots in the vicinity of the canal, were kept constantly covered with dust or mud. The carts used for

this purpose were like sieves, and allowed their contents to escape through the bottom in streams; drivers were careless in their management of them, and would fill them to overflowing. The police were appealed to, and for a time made arrests, but magistrates refused to inflict punishment; the Mayor was requested to refuse licenses to these faultily constructed carts, but to-day the nuisance is as great as it was twelve months ago, nor do I see any indication that relief will ever come till all the hills in this vicinity are removed. Residents along these streets cannot keep their doors and windows open, for when the slightest wind blows the air is filled with this dirt, ground to powder by the constant grinding of the wheels. It is the crying nuisance of this region, and demands active interference on the part of the authorities.

One year ago a considerable portion of an inspector's time was occupied in the arrest of drivers for depositing garbage on vacant lots. Since the 1st of February, 1874, when separate contracts were awarded for the removal of garbage and ashes, the material used in filling lots is in my district unobjectionable. During five months of the contract, 1,536 loads of garbage, which in former times would have been deposited on vacant lots, were removed from the city, and used to fatten hogs; and this was collected but from two wards, the 3d and 10th.

The mortality in 1872 of the 8th and 22d Wards was very high, and indeed the ratio of deaths for that year, per 1,000 of the population, compares very unfavorably with that of some other portions of the city, especially with the old 3d Ward, where the rate was but a fraction over 19 in the 1,000; or, to express the difference in another way, if the entire population of the 2d Sanitary District had been surrounded by the same conditions as surrounded the inhabitants of the old 3d Ward, there would have been in this District alone 541 less deaths in 1872 than there actually were. Some of this great difference in the mortality may be due to the character of the people, their food and manner of living, but most of it, I doubt not, is directly attributable to the nature of the soil upon which this portion of the city is built. A glance at a map of Brooklyn, showing the old water-courses, will demonstrate that the unhealthy part of the 10th Ward, in the neighborhood of the canal was once a marsh, the creek running far into what is now a densely populated district. To renderthis sufficiently solid to build upon it was filled in, and in this process, then as now, no regard was paid to the natural course of the water, nor to the kind of material used in filling. Obstructed water-courses and made land, that is, land made of mixed ashes and garbage, account for the high mortality of this and other similar regions. If this may be looked upon as in any way accounting for a high death rate, what may we not expect when that section of the city situated between 3d and 4th Avennes, Baltic and Carroll Streets, is built upon! Thousands of loads of garbage, street dirt and other animal and vegetable filth have been deposited on these lots. A single incident connected with the draining of the block bounded by 3d and 4th Avennes, Union and Carroll Streets, will indicate what may happen in the future. In 1873 this block was covered by a pond of most offensive water, so that Union Street, formerly a favorite route to the Park, was avoided, to escape the noisome odors which came from this filthy pool. At the recommendation of the Board of Health, an old drain under Carroll Street was opened, and a ditch dug in the ground that was not covered with water, connecting the pond with the drain. In digging into and turning over this garbage-soaked soil the laborers were obliged to give up the work, so offensive was the stench, and when night came on

they were seized with severe cramps, together with nausea and vomiting; this was by no means a recent filling, several months having lapsed since the material was deposited, convincing proof to my mind that the theory held by some, that ashes destroy the garbage, and render it harmless, is untrue, and not founded upon facts. And this ground is to be the foundation for cellars at no very distant day! If a map were to be prepared, and the character of the material used in filling the low lots of the city were to be recorded thereon, much of the mystery surrounding the causes of a high mortality might be cleared up, and such a record would be a rich legacy to the future sanitarian of Brooklyn The great object of sanitary work being to diminish the death-rate of a community, it seems absolutely essential that some method of registration should be kept in every health-office, by which each house may be charged with the deaths that take place within its walls. From such a record can be learned at a glance where sanitary work is needed, and much purposeless inspection saved. With this object in view I would again call the attention of the Board to the Insurance Maps, where each house is represented with space enough to record the deaths for a decade. Of such a record I have often felt the want, and I presume I express the sentiment of every inspector, when I say that such a reference would be invaluable, and would give an object to his sanitary work which must otherwise be lacking.

The change which has taken place since pigs were banished is most marvelous. Premises where they were kept, which, a year ago, were filthy in the extreme, are to-day clean and wholesome. No sooner were the pigs taken away than the sties disappeared, yards were cleaned and fences whitewashed. It would seem that swine are not only in themselves a nuisance, but that their very presence is degrading. It is to be hoped that goats will be as effectually exterminated.

The new Section, 177, which the Board have added to the Sanitary Code, will be of great effect in preventing contamination of the soil. It is a difficult task to persuade the people that anything which does not emit foul odors is a nuisance; but they are gradually being educated to believe that it is as detrimental to health to poison the ground with decomposible organic matter as to contaminate the air with offensive vapors, and that if the former is allowed the latter is sure to follow.

I would most earnestly call the attention of the Board to the constant obstruction of hopper-closets in tenement houses. The occupants of these dwellings are either ignorant of the effect, or indifferent as to the results of throwing all kinds of things into these closets, obstructing them so that they overflow and flood the cellars with filth. Nothing, in my opinion, but sewered vaults in the yards should be allowed in tenement houses, and sufficient water supply should be furnished to carry into the sewer the fecal matter, as soon as it is deposited in the vault. As now arranged sewered vaults in this city have not water enough, and are almost as much expense to their owners as if unconnected with the sewer, for they have to be cleaned quite as often.

The New York Board of Health call attention, in their Report for 1872, to the beneficial results which have followed the introduction of ventilating shafts in tenement house privies, so constructed as to carry off all vapors above the surrounding buildings.

Great improvement is manifest throughout my district since the Board have enforced the ordinance requiring carts engaged in the removal of manure to have a close canvas cover; and also in the restrictions which have been placed upon the opening of manure vaults for the removal of

their contents. Until the enforcement of the ordinance forbidding the removal of manure between the hours of 8 A. M. and 6 P. M., when the vault is situated under the sidewalk, or in such proximity to it as to render it necessary to use the sidewalk, it was no uncommon thing to see the entire width of the sidewalk taken up by a smoking heap of offensive manure, so that passers-by were compelled to cross over or to walk in the middle of the street. It is, I doubt not, difficult, and at times impracticable, for farmers to remove manure so early as is required, but those who occupy public property must incommode themselves rather than the public. It is a matter of serious consideration whether a manure vault under or at the edge of the sidewalk is not of necessity a nuisance in itself, for it cannot be so closed as to prevent the foul odors from escaping; it would be a great accommodation to farmers, and a great boon to the public, if all such vaults were declared public nuisances, and removed.

The cow-stables in this District are sixty-two in number, containing in the aggregate about five hundred cows, the greatest number in any one being twenty-four. The most of these are in the 24th Ward—some in the 9th and 22d and but few in the 3d and 10th Wards. In an inspection of these stables I have calculated that nearly thirty miles must be traveled. The condition of these stables, their drainage and surroundings, are, as a rule, so disgusting that I feel satisfied that those who purchase the milk would cease so to do could they but once see from what source the milk is obtained; indeed were consumers of milk to make such inspections, sanitary officers would have but little to do. I wish I were able so to describe one of these stables as that the public would demand a thorough reform in the manner in which they are constructed and maintained. A low wooden stable is built of sufficient superficial extent to accommodate the cows, with space enough for each to stand up and lie down; but this is calculated to such a nicety that one cow can hardly switch her tail without hitting the next one. The height of the stable is regulated by the height of the individual who owns the stable, so that he can walk through without touching his head—nothing more is to be desired. Light and air are not provided for, in fact are evidently provided *against*, for, when through some defect in construction, a few rays of sunshine find their way into the interior, a board is nailed across or a few rags stuffed into the crevice. The manure and urine from the animals lie where they fall, or trickle through the cracks of the floor to saturate the earth beneath. I have frequently called attention to this, and have been met with the reply: "It is'nt time to clean up yet; the boy does that when he comes back from selling the milk." When the boy does come back he piles it up in the yard outside, and little streams run from this offensive heap down along the ground, in front of the door of the little room where the milk is kept, till the morrow comes, and the boy goes out again on his rounds. In the filth of the stable, her own offscourings, the cow lies down, and as her head is immovably fixed between two upright bars of wood, she cannot clean herself; her flanks are coated with dried manure, and her tail, long enough to reach the filth, carries with it as the flies are brushed away, this liquid filth to her sides and back. This is by no means an overdrawn picture, but portrays the state of things in many of the cow-stables in my district.

I am thoroughly convinced that cow-stables not only will not, but indeed cannot be kept in a proper sanitary condition, so that the health of the animals, and the surrounding population, will be preserved. It is essential to prevent soil contamination that the floors of stables should be tight,

and this is so difficult an undertaking that it is practically impossible, and unless the ground beneath is cemented it will become soaked with urine. If sewers exist in the streets, connections may, it is true, be made, but such localities are usually populous, and for this reason cow-stables are objectionable; and under such circumstances proper exercise cannot be given to the animals unless they are driven to open fields, and as this must be through streets where there are many travelers, it is a dangerous proceeding and a violation of the code. If no sewers exist, tight cesspools must be constructed, and as they would rapidly fill, they would require frequent emptying which could only be done at considerable expense.

My experience is, that the cow-stables would require almost weekly inspections, so utterly indifferent are their proprietors to the regulations of the Board of Health, and such inspections are impracticable, as many miles must be traveled to make a complete inspection. The duty of this department to keep pure the soil on which dwelling houses will, at no distant day be constructed, is so urgent that the question of allowing a cow-stable to exist within the city limits is a very serious one, and yet it may well be said that if they are driven from the city where they can be kept under some sanitary influence, their proprietors will neglect all cleanliness, and the consumers of the milk must suffer. It is a problem which demands thoughtful and careful consideration.

No healthy milk without healthy cows. Neither chemical nor microscopical examination will enable even an expert to say that a given specimen of milk is unfit for human food. It is true that pus and decided chemical impurities may be detected, but a deteriorated milk due to deficient nutrition of the cow cannot be recognized with certainty. This being so the only means at our disposal to ensure a supply of good, nutritious milk is to see that the animals from which it is obtained are themselves healthy. This is no easy task. Disease being oftentimes so little at variance with a condition of health cannot always be said to exist. A diseased animal may be killed and cut up into sirloin and steaks, and no one however experienced can say that these parts are from an unhealthy animal; and yet to eat them may induce sickness, and perhaps death. Our only protection then is to see that the cows, upon whose milk thousands of children are yearly reared in this city, are kept in well-ventilated, airy and clean stables, that their refuse is removed so that neither the air of the stable which the cows must respire nor the milk itself can possibly be poisoned by its exhalations, and what is equally important, that the cows shall have abundant space out-doors for exercise. Many cows in this city are put into their stalls in November, and do not again leave them till April, more than five months being spent in absolute inaction within the contracted space alloted them, having not more than five or six hundred cubic feet of air to breathe per hour, while they should have at least six thousand, and having on the average not more than three hundred and fifty cubic feet of space, while they should have one thousand. Is it to be wondered at that hundreds of children die annually from cholera infantum, and that one half of all the children die before they are five years old, when milk from such cows is their only food?

I have had occasion to speak of the high mortality in those portions of my district which were originally marsh land, and subsequently filled with mixed ashes and garbage; there is an additional factor in the problem to account for this death rate which has not been mentioned, namely, the Gowanus Canal. This is nothing more nor less than an open

sewer, receiving as it does through the Bond street, Sackett street and President street sewers, the contents of the privies and the refuse of the stables from a large portion of the 3d, 10th, and 22d Wards. I have stood at the foot of Bond street, where this large sewer empties into the canal, and distinguished human excrement as it came from the sewer's mouth. This canal comes up into the very heart of the city about twenty blocks from Gowanus Bay, and as there is no through and through current, whatever is poured into it settles to the bottom and gives off exhalations of a most unwholesome nature. The whole surface of the water is agitated by the bursting of the bubbles of gas as they rise from the human excrement and other filth at the bottom, and when they reach the surface break, diffusing the noisome vapors far and wide. No sewer should be permitted to open into the canal, and I would most earnestly recommend that the Board give this matter their consideration at the earliest possible moment.

Respectfully submitted.

J. H. RAYMOND, M. D.,
Sanitary Inspector.

SANITARY INSPECTION DISTRICT.

REPORT OF S. W. FISK, M. D.

To Dr. B. A. Segur,

Sanitary Superintendent:

Sir:—I have the honor to submit the following report concerning the 4th Sanitary District, commencing at the organization of the Board and extending to date:

DISTRICT.

The 4th District comprises the 20th, 7th, 21st, 23d and 25th Wards, has an area of nearly five square miles, and an estimated population of about 80,000. It is entirely interior, having no water front, and is mainly occupied by dwellings, the manufactories being comparatively few in number. The soil is, for the greater part sandy, and the drainage is, with some exceptions, fair. The older and more thickly settled portion are generally well sewered, and in the newer and more recently built-up sections, much work of this nature has been done during the period covered by this report. The rapid extension of the sewer-mains throughout the outlying sections is greatly to be desired, not only to relieve surface-accumulations caused by street-grading, but to provide adequately for house-drainage, the number of tenement houses and dwellings being steadily on the increase.

Numerous instances already exist of slop-sinks discharging into street gutters, and upon vacant lots, and of unsatisfactory attempts to resort to cesspools which rapidly fill and speedily become offensive.

The sanitary work in this district, for the past twenty months, has been of a varied nature, each locality and season exhibiting individual characteristics in the evils to be remedied.

The inspection of tenement houses has formed a prominent feature in the work. These houses are generally of three or four stories, containing six or eight families. When double, that is, formed of two wings with a common hall-way between, they may contain twelve or sixteen families. The larger or double houses are not numerous, the prevailing type being smaller or medium-sized. The most conspicuous defect is the absence of ventilating means. The hall-ways, not communicating with the external air, and receiving the vitiated air from the interior rooms, are close and offensive. But the most striking instances of non-ventilation are furnished by the dark bedrooms. These lie between the front and rear dwelling rooms, the exterior bedroom being contigu-

ous to the hall-way and separating the interior therefrom. They seldom comprise more than from 600 to 700 cubic feet, and are usually formed with no aperture at all besides the door opening into the dwelling-room. While this is almost invariably true of the interior bedroom, the exterior sometimes has a window opening into the hall-way. The presence of contaminated air in these dark pockets is plainly perceptible, and the depressing and pernicious influence exerted thereby, is unmistakably evident. In addition to these defects, we find improperly located and offensive water-closets, untrapped and leaky sewer pipes, unsewered vaults, house-drains discharging into street gutters and upon vacant lots, full and offensive vaults and cesspools, cellars wet from surface flows or soil-water, and yards filthy from accumulations of garbage and refuse.

The necessity for a continuous and systematic inspection of these houses is but too evident, and the benefits arising from such a work, not only to the inmates themselves but to the city at large, cannot be too highly estimated. For it is in the crowded and pent-up population of our tenement houses that contagious and epidemic diseases take their most persistent hold, and are most surely and rapidly disseminated.

The inspection of the public school houses developed the fact that some modifications in the present methods of heating and ventilation were desirable, although the most intelligent use was generally made of means provided. Some instances of crowding were observed, and a few cases of objectionably located vaults and inefficient drainage were found. The importance of great circumspection in the readmission of pupils convalescing from a contagious disease was shown, and the necessity of demanding some assurance (as a physician's certificate) of complete recovery, or the absence of contagion, was plainly manifest.

The cow-stables have been repeatedly inspected with a view to ascertaining their condition as to cleanliness, drainage, space, ventilation and food. Some were found so objectionably located and kept, that their removal was necessary, others being found susceptible of improvement and eligibly located were allowed, after compliance with requirements, to remain. Among the worst of those removed was the swill-milk stable in Franklin Avenue, near Flushing. This had been a stable of the character indicated for many years, formerly attached to a distillery now long disused. Here the cows (among which the stump-tail variety abounded), were kept constantly confined in low, narrow stables, and fed mainly on distillery swill. The stable being almost entirely unventilated, and the ground beneath being saturated with the filthy drippings of years, the atmosphere in the interior of the place was intolerably offensive. This establishment surrendered only after a most determined resistance, and vacation was finally completed by a resort to the power of the law The practice of feeding brewer's grains, was after investigation allowed to continue, with the restriction however that they be fed only while fresh and unfermented. The feeding of distillery swill being prohibited by statute, and it having been shown deleterious when used to any considerable extent, no stables where this practice existed were recommended for permit, no matter how perfect the condition of the premises might be.

Actions at law (calling for a discontinuance of swill-feeding, or vacation) are now pending against a number of stables, the most notable of which is the large one situated in the 21st Ward, containing about 200 cows.

The inspection of the piggeries resulted in the discovery and vacation of a large number of these filthy dens, most of which were found in the "shanty" district of the 7th Ward, known as Jackson's Hollow. This whilom paradise of "squatters," is fast yielding to the march of public improvement, the work of street-grading and sewerage having already produced a marked change in its aspect, and building enterprise having been encouraged to invade its borders. But the vacation of a pig-pen was not always a certain finality, as the lapse of a few weeks would occasionally find the pen reconstructed, and occupied as at first. Hence, it was found necessary in some cases, to inflict a penalty in order to compel a wholesome respect for the law.

The attempt to institute a much needed reform, by insisting on the separation of ashes and garbage, met at first with some resistance, but now that the benefits of the measure are appreciated, little or no trouble is experienced where the garbage cart calls with proper regularity. When we consider the vast amount of house-refuse daily delivered at the offal-dock, it is only necessary to reflect that a large proportion of this mass mixed with ashes, as under the old method, would have found its way to many of the sunken lots of the city, to see plainly the efficacy of the recent reform.

The efforts to establish an efficient garbage service have been attended with but partial success, yet the present system is superior to any previously existing. The present method of collection is not entirely satisfactory in its practical operation, and this appears to be mainly due to a neglect of such details as the regular and frequent passage of the carts through all inhabited blocks, a distinct announcement of their approach, and a proper vigilance in searching for all garbage awaiting removal.

A marked improvement has been apparent in the matter of street-cleaning during the past year. Reports of unclean streets have been much less frequent than in the preceding eight months, and prompt attention having unusually been paid to any subject of complaint.

By a reference to the Registrar's reports, it will be seen that a large percentage of the mortality in this district arises from zymotic causes. Among these causes malaria plays an important part, and while perhaps not alarming in its nature, is of sufficient consequence to call for energetic efforts for its removal. A glance at the topography of the district will reveal some pronounced sources of this. We see large tracts of saturated soil, some partially drained, others entirely undrained, some with water ponded by street grading, others in their natural, swampy condition, surrounded in most cases by a dense or growing population, and sometimes even built upon and occupied. Observe, for instance, the large tract of swamp-land bounded by Nostrand, Myrtle and Marcy Avenues, and Ellery Street. Here we have a vast marsh, presenting varying degrees of moisture, with a large pond of stagnant water at its northeasterly corner. Approached as it is on all sides by a tenement or

dwelling-house population, occupied as it is by dwellings erected in the midst of its ooze, or barely raised therefrom, we are prepared to witness the work of malaria with its long and familiar train. Similar in many respects was, until recently, the tract bounded by Throop, Putnam and Yates Avenues, and Halsey Street; but a marked improvement has been made here by the introduction of sewerage. Similar again, though of less extent, was the tract bounded by Yates and Lewis Avenues, Stockton and Floyd Streets; this too has been greatly improved by drainage and partial filling in. A portion of the northerly border of the district is exposed to this influence, not only from the low-lying lands within its own boundaries, but also from the swamp lands of the 19th Ward, and the exceedingly low elevation of this locality offers a serious obstacle to efficient sewerage. Groups of sunken lots containing ponded water are to be found in different portions of the district, but they occur, as might be expected, in the newer or partially improved sections. Jackson's Hollow furnishes striking examples of these, particularly at the intersection of Schenck and Steuben Streets with Willoughby Avenue.

Some of the deeper of these ponds may be classed as "dangerous," from their liability to cause drowning accidents. Of such a character is the pond on Atlantic Avenue, near Howard Avenue, in the 25th Ward.

This district has been fortunate during the past twenty months in the matter of contagious diseases, the mortality from such having been comparatively small. The cases of small-pox are not numerous, and the disease was, by prompt means of quarantining or removal, disinfection and vaccination, confined almost without exception, to the cases originally reported or discovered. The organization of a special corps for the investigation of small-pox cases and the performance of vaccination has been attended with satisfactory results, and the surveillance now practiced over all infected houses insures a rigid quarantine and a proper care in regard to disinfection.

During the past year, this district, in common with the rest of our city, has been visited by an epidemic of diphtheria, but a reference to the Registrar's tables will show that it has suffered but slightly when compared with many less favored sections. Special investigations of the locality of each case have been made, with the view of detecting and correcting any unsanitary condition, and these early in the epidemic, resulted in almost invariably finding some evident cause of air poisoning, while later a careful inspection would frequently develope nothing of an unsanitary nature.

Thus, while in the earlier investigations, reports of offensive vaults and cesspools, obstructed, leaky and untrapped sewer pipes, wet cellars, inefficient house-drainage, improper disposition of house-garbage, and the like, formed the larger proportion of the returns; in the latter they formed much the smaller. This evidenced the spread of the disease from its localities of probable origin, to other and well-conditioned sections, by means of its contagious or infectious properties.

As an evil of great magnitude, I would refer to the numerous old-fashioned vaults and cesspools, that through the parsimony and neglect

of property-owners, are still allowed to remain as soil and air-contaminators. When the aggregate effect of these filth-reservoirs is considered, the necessity of compelling their abolition, and the instituting of sewer-connections where efficient mains exist, is plainly apparent.

In concluding this brief retrospect, I feel called upon to acknowledge the assistance and cooperation received from a large body of the citizens of this district, in the work of sanitary reform, such action not only proving a great aid and encouragement to the daily worker in the sanitary ranks, but indicating an intelligent appreciation of the importance of the subject, and of its bearing on the public welfare.

Respectfully,

S. W. FISK,
Sanitary Inspector.

Brooklyn, December 31st, 1874.

SANITARY INSPECTION DISTRICT.

REPORT OF WALTER REED, M. D.

HEALTH DEPARTMENT, CITY OF BROOKLYN,
No. 66 COURT STREET,
December 31*st*, 1874.

B. A. SEGUR, M. D.,
Sanitary Superintendent.

SIR:—I have the honor to submit the following report of the Fifth Sanitary District, from the date of my appointment, June 1st, 1873, up to the present time. During a part of this time, the 5th District comprised the 13th, 14th and 19th Wards, but in July, 1874, a change was made by which the 14th Ward was taken from this district, and the 16th and a part of the 18th were added to it. So that at the present time, the 5th District comprises the 13th, 16th and 19th Wards and a part of the 18th, and has the following boundaries: North, Grand and Ten Eyck streets, South, Broadway and Flushing Ave; East, City line, and West, East River and Navy Yard. It covers an area of about five square miles and contains a population of more than 60,000.

In view of the above changes made in my district, I shall confine myself, principally, to the 13th and 19th Wards, with merely a reference to the 14th, 16th and 18th Wards, all of which wards will be especially referred to in the reports of other Inspectors.

The general topography of the district varies much with the different wards. The 13th, 14th, 18th, and the greater portion of the 19th Wards consists of elevated ground, with a dry, sandy soil, and admits of good drainage. While, on the other hand, the southern part of the 19th Ward which has been recovered from the Wallabout Swamp, and a large part of the 16th Ward, consists of land only a few feet above tide-level, and is difficult of drainage.

The same remark will, with slight alteration, apply to the sewerage of this district. The 13th, 14th, the greater part of the 19th and 16th Wards are well sewered, whereas the 18th is almost wholly unsewered. I desire to call attention to the very deficient sewerage and drainage which has existed, to within a few months, in that part of the 19th Ward, known as the "Wallabout Swamp Lands." This ground is only a few feet above tide-level, and is in a thoroughly saturated condition during the entire year. This saturated condition of the soil is due to the fact that in grading and filling in the streets of this part of the ward, no measures were taken for the preservation of drainage in the original bed of the creek, but on the contrary, streets were filled in across the natural out-flow of the sur-

face and subsoil water; thereby causing not only a highly saturated state of the soil, but giving rise to many large ponds of stagnant water. As a natural consequence, malarial affections have prevailed extensively in this immediate neighborhood.

About ten years ago, a large sewer was constructed in this district, extending from Broadway along River street, Kent Avenue and Clymer street, to the East River; and this sewer was constructed especially with the purpose of draining the Wallabout District. It accomplished much as regards surface drainage, but did absolutely nothing toward removing subsoil water. Dr. Joseph B. Jones, at that time Health Officer of this city, brought prominently to the attention of the Common Council the fact that this sewer would only remove the surface water, and strenuously urged upon the council, that, before the streets were filled in and graded, the course of all original streams should be rigorously preserved by excavating to a firm subsoil, and constructing in their beds loose stone drains.

Notwithstanding the fact that the Common Council had requested the opinion of the Health Officer, as to the best policy to be followed in carrying out the proper drainage of the district, it does not appear that his suggestions were followed. And just here I would remark, that it is a matter of serious regret that, in large cities, the Department of Health has no control over the filling and grading of streets, especially in swamp lands. For it is in this matter that the most good can be done for the public health. There must be adequate drainage and a dry subsoil, or the public health will suffer. These facts cannot be gainsaid. But when we come to inquire into the matter, we find that the control of grading and filling is intrusted to those who will not learn the simplest sanitary laws, or if cognizant of them, who unhesitatingly persist in their violation. The filling of streets goes on contrary to all sound authority, the flow of streams is obstructed, the soil becomes saturated, large ponds of stagnant water are formed, and, at least, when dwellings are constructed on this ground, the owner finds that his family are sick with malarial affections, and his cellar flooded with stagnant water. And it is not until this late hour that the Board of Health is expected to show its authority by compelling the citizen to drain his cellar, the flooding of which was due to the gross negligence of those who graded the public streets.

Within the past few months sewers have been constructed in nearly all the streets of this Ward, but these sewers will not alleviate matters but slightly, and this part of the city of Brooklyn will always be an unhealthy location for dwellings.

The policy of the Board of Health to drain all ponds, has been followed in every instance where it was possible so to do. By this means many localities have been relieved of a prevalent source of malaria. But in several instances delays and difficulties have been encountered. It is very often a most difficult matter to ascertain the owner of the lot on which a pond is situated, and many days may be spent in a fruitless effort to find the rightful owner. If the Board of Health had the means wherewith to drain these ponds, it would require but a short time to rid the city of them entirely.

It should be a source of congratulation that much has been accomplished towards improving the condition of the streets, during the year 1874. Throughout the summer of 1873, the streets in my district, and especially those of the 14th Ward, were in a shockingly filthy condition. The gutters were full of garbage and stagnant water, and the center of the street

was scarcely less free from filth. Not more than a dozen streets in this district were cleaned during the entire summer of 1873, notwithstanding the fact they were, time after time, reported as being in a very filthy state. Orders were served on the Street Contractor to clean the streets, but were either treated with contempt or passed in silence; nor did the contractors take any notice whatever of the authority of the Board of Health until they had been repeatedly arrested. In some instances, when brought into court, they escaped a fine by the most audacious mendacity. Still, by weekly inspections and reports of all streets in a filthy state, and by continuous arrests, the contractors were made to comprehend that the Board of Health were in earnest in this warfare against their negligence. Before the summer had passed, some improvement was noticed in this direction, and better still, when the time arrived for signing the contracts for the year 1874, the contractors were prepared to do the work. The result is that the streets of this district are in a cleaner condition than they have been for a number of years. This statement is in accord with the testimony of old residents of the district.

Prior to the beginning of the year 1874, it had been the uniform custom throughout this district, to mix ashes and garbage in the same vessel. The contents of the vessel were then received into the contractors' cart, and thence dumped into the most convenient vacant lot, where it remained to go through its various stages of decomposition. Acting under orders from the Sanitary Superintendent, the drivers of all carts caught in the act of dumping this material within the city limits were arrested, brought into court and fined. Although this did not accomplish much toward relieving the city of this filth in vacant lots, it brought about a healthy public opinion on the subject, and plainly demonstrated that some better course should be pursued in the disposal of garbage and house-refuse. The result of this opinion was fulfilled in the authority given to the Board of Health to draw up proposals for the removal of garbage. Hence, during the year 1874, garbage and ashes have been kept in separate vessels, and removed separately. Although the quantity obtained at first was small, it is encouraging to know that the increase has been gradual, and has reached as high as 400 loads per week for the entire city. In that part of my district occupied by private residences, the separation has been quite complete and satisfactory. On the other hand, in the tenement districts, the separation has been, in many respects, incomplete. The tenants, besides their carelessness in disposing of such material, have been so long accustomed either to throw the contents of their slop-pails into the street, or mix them with the ashes in the same vessel, that it will require much time and attention to enforce strict obedience to the law. I am well convinced that a *prompt* and *thorough removal* of garbage from each and every street of the tenement district will do much toward accomplishing this result. The good which is being done by the Board in the removal of garbage without the limits of the city, cannot be easily estimated. A visit to the offal dock, where this refuse is carted, will, I think, convince the stoutest opposition that the city is being relieved of a great evil.

The order of the Board to enforce sewer connection with all privy-vaults has been followed with as much dispatch as was consistent with the due discharge of other duties. The old-fashioned vaults whose walls were constructed of stones loosely put together, and which permitted subsoil soakage, have in every instance been condemned, and it has been ordered that such vaults be emptied, disinfected and filled with fresh earth, and that a new brick cemented vault be constructed, having proper connection with the sewer.

It has been the Inspector's object in all cases to enforce a strict compliance with the Tenement House Act. This comprised the construction of proper vaults, the drainage of yards, alley-ways and areas, the construction of windows for dark bedrooms, roof-ventilation, etc.

There were at one time 14 of these stables within the limits of my district, but at present there are not more than 4. The others have been closed because of the refusal of the owners to comply with the law.

There are two gas-houses situated in this district. Both of these have been the subject of complaint by citizens residing in the 13th and 19th Wards.

The method of purification, as followed by these companies, is that known as the "dry lime" method, the great objection to which on the part of the community, is that whenever the purifiers are opened and the lime exposed to the air, very offensive odors arise and are carried by winds over a large extent of the city. This odor is due to the sulphuretted hydrogen, which is evolved on exposure of the lime which has been used. Considerable time was devoted to the inspection of these works, and also gas-works in New York City, with the object of ascertaining whether some less offensive method of purification could not be substituted for the lime method. Finally an order was served on one of the companies requiring them to so conduct their business as that it should cease to be a public offense. In compliance with this order the company changed their method of purification, and since July, 1874, have used the "iron" method of purification The recommendation of this method is that when the iron is exposed to the air (after being used), it does not give off the odor of sulphuretted hydrogen, and hence the offensiveness is almost wholly removed. Since the introduction of the "iron" process of purification by the "People's Gas-Light Company," I have made a careful inspection of their works, and am prepared to say that the offensive odors, which are generally met with, have been greatly diminished.

In view of the fact that the "iron" process has been introduced into the above works with satisfaction to both the company and the public, and in view of the fact that the same process is being used by several of the gas companies of New York City, and is found to meet all the requirements of a good purifying material; and furthermore, in view of the fact that the works of the "Nassau Gas-Light Company" as now conducted, are a public nuisance, I would respectfully recommend that the company be compelled to abandon the "dry lime" process, and substitute in its stead the "iron" process, or some other process equally free from offense.

In conclusion, I may be permitted to offer a few general remarks on some of the more important sanitary needs of this district. And as first in importance, I would respectfully refer to the subject of tenement house inspection. Experience has taught me that it is in this particular line of duty that reforms are most necessary, and the assistance of the Board of Health most urgently required. I believe, could an Inspector's time be wholly given to this work, that his services would amply repay the community. It is here that we find the most crowded population, living under the worst hygienic condition, and when we consider, for a moment, that the only control exerted over this population is, that of an ignorant landlord or agent, whose interest is solely a pecuniary one, it is, at once, evident that unless some authority, such as that of the Board of Health, is brought to bear on this population, no attention, whatever, will be paid to the public health. These people are wonderfully careless about the condition of their rooms and the general premises, and ignorant beyond con-

ception, of the plainest hygienic requirements. Nor does it suffice to make an occasional inspection, accompanied with a proper admonition. On the other hand, it requires the constant presence of the Inspector to accomplish any good. The large size of the district, necessitating a prolonged absence from localities which should have had more attention, has frequently shown that the Inspector's usefulness was, by this means, much impaired. Aside from the influence which could be directly exerted over the general sanitary state of the premises, many cases of contagious diseases, which, at present, unavoidably escape detection, would be brought to light, and epidemics be more easily crushed out.

In this connection, I deem it proper to say a word as to the spread of contagious diseases by means of the Public Schools of this city. I do not think I should err if I called them great "hot beds" for the dissemination of such diseases as measles, scarlatina, and perhaps diphtheria. There is no cause for surprise that contagious diseases are spread by the public schools, rather should it be a cause for surprise that these diseases are not more alarmingly prevalent. Children recovering from scarlatina and rubeola are permitted to return to school during the stage of desquamation, and at the very time when these diseases are the most contagious. In the majority of cases the children are those of poor parents who are anxious to have their children return to school as soon as possible, for the mere matter of convenience. And do we wonder at the prevalence of these diseases. I am well convinced that a radical change is needed in this matter of inspection of contagious diseases. There should be a competent physician whose duty it should be to visit all school-children sick of contagious diseases, and who should be the sole judge as to when it was proper and safe for them to return to the school. I believe that by this means more lives would be annually saved and more sickness prevented than all the other combined work of the Board of Health could possibly accomplish.

Respectfully submitted,

WALTER REED, M. D.,
Assistant Sanitary Inspector.

SANITARY INSPECTION DISTRICT.

REPORT OF G. W. HALL, M. D.

B. A. Segur, M. D.,
Sanitary Superintendent:

Sir:—I have the honor of submitting a report of the sanitary condition of the District placed under my supervision from December 17th, 1873, to date. My District, at the time of appointment, comprised the 17th and 18th Wards; subsequently the 14th and 15th Wards were added, and all that portion of the 18th Ward east of Ten Eyck street, was made a part of another District. The limits of my District are Newtown Creek and Queens County upon the north, the 16th and 18th Wards upon the east, the 13th and 16th Wards upon the south, and the East River on the west. This District contains about five square miles.

In this District a large amount of marsh lands and two creeks exist. These are the greatest evils, which depend upon the physical conformation of this District.

Bushwick Creek was once a navigable stream, but for a long time has been little more than an open sewer. Fifteen sewers empty into it, and with each flood-tide, the sewerage is spread over about one hundred (100) acres of land. This land is surrounded by a densely populated tenement-house district, which suffers to an alarming extent from its malarious exhalations. This tract of marsh land has long been a source of deep and serious complaints among the inhabitants of this vicinity, and unless decisive steps are speedily taken by the proper authorities toward a complete and final abatement of this evil, property must depreciate, and health and life must continue to suffer. As this creek is regarded as a navigable stream the proper authority to remedy the trouble rests with the National Congress.

There is also the Newtown Marsh which embraces upwards of 1200 acres of land easily reclaimable. Although it does not yet present all of the objectionable features of Bushwick Marsh, yet from its situation, laying between the two counties of Kings and Queens, and a creek running through it, it will, without doubt, eventually assume many of the same conditions. A class of factories are settling along its banks that already begin to contaminate the air and water, by their foul exhalations and refuse. Between these two large tracts of marsh lands we have a Ward (the 17th,) containing about 25,000 inhabitants affected to a greater or less extent by the miasmatic influences of these marshes. If we examine mortality records for the year 1873, we ascertain that the number of deaths in the 17th and 18th Wards for that year were 972 from all causes. Of

this number 317 are directly traceable to zymotic causes as the analysis will show:

Small-pox	10	Choleral Infantum	132
Measles	4	Cholera Morbus and other Diarrhœal Diseases	37
Scarlatina	29	Remittent Fevers	15
Diphtheria	16	Other Zymotic Diseases	25
Croup	20		
Whooping Cough	13		317
Typhus Fever	1		
Typhoid Fever	15		

Thus, thirty-four in every 1000 deaths were from zymotic disease during that year, and we know the causes of mortality have not been reduced during the past year. This death-rate it is believed, is very largely due to the malarial influence of this region. It is fearfully suggestive of what the future will be if the causes are not removed or remedied.

During the Spring of 1874 I spent a portion of my time among the tenement houses of my district. The majority of them I found defective in two important particulars, namely, ventilation and unsewered privy-vaults. As a result of those inspections, a decided improvement in respect to ventilation has taken place by the introduction of galvanized iron ventilators ten inches in diameter, hooded, and placed in the roof of those houses unprovided with roof ventilation.

I find since the commencement of tenement house inspections, a more ready disposition, on the part of the owners or agents, to comply with suggestions which I may make without the usual recourse to an official notification.

On sewered streets the privy vaults of a large portion of these houses already have sewer connections. In streets where sewers are not yet laid the vaults are found to require frequent emptying, owing to the presence of a large amount of soil saturation, or the negligence and in some cases the malicious conduct of servants in depositing ashes or garbage in the vaults. The most effective remedy for this latter source of difficulty rests with the owner in the appointment of an overseer in each house who could watch for offenders, the penalty to be immediate ejectment. This course closely followed would speedily put an end to this annoyance.

The collection of ashes and garbage has been more thoroughly performed in this district during the past year and a half than for years before; this is due in a great measure to the supervision of the Board of Health, who, although they have no immediate control over the contractors, have made use of the moral effect of a citation before a justice for neglect of duty or a violation of a sanitary ordinance. The course has been beneficial, and the results are seen and felt every day.

The streets are also cleanlier and the scraping and sweeping more regularly performed; although the methods are not fully satisfactory, yet the indications are that contractors are learning that if they draw their pay it must be for work actually performed.

The ash-box nuisance has been greatly abated by requiring landlords to notify their tenants to provide themselves with separate boxes or barrels for ashes and garbage, and see that they are placed where the collectors can readily get them. At first there was considerable opposition to this order, but so soon as the people began to reap the benefits of this system, their opposition speedily vanished, and at this time there are not six of the old style of stationary boxes in the entire district. The amount of both

ashes and garbage collected has materially increased. Less of these matters are thrown into the streets, and the probabilities are that before another annual report is made, the work will be thoroughly systematized.

A number of streets have been for a long time greatly out of repair, and have been the subject of numerous complaints and reports. In some of them, repairs are now rapidly going forward; this improvement will enable the street contractor to keep his district clean with less difficulty and expense, and remove a source of frequent complaint.

For a long time this district, especially the more northern portion of it, has required greater sewer accommodations year after year; petitioners have been denied until they almost despaired of ever receiving the much needed sewers. At last the Board of Health endeavored to get that done which others had failed to secure, and the result is that contracts have been awarded, and the work performed in sewering Van Cott, Nassau, Norman and Meserole avennes, Calyer, Guernsey, Lorimer, Leonard, Orchard, Eckford, Ash, Box, Clay, Dupont, Eagle, Freeman, Huron, India, Java and Kent streets. A large sewer through Oakland avenue is necessary before the system is complete; adjacent to this avenue for nearly a mile is a low tract of land, Newtown Marsh, with its surface just above low water mark. A large number of manufactories are located upon this creek, prominent among which are, phosphate, fat rendering, hide and horn, bone burning, rendering of dead animals, and oil refineries, all emptying their refuse into the creek, so that the soil along it is necessarily largely composed of refuse material. This condition, the want of thorough drainage dependent upon the formation of the land, cellars damp and often filled with water, the presence of a large tenement population, a large number of whom are poor people, render this locality the almost constant abode of malarial troubles—intermittents are recognized the year round.

Again, owing to the continual saturation of the soil, the contents of privy-vaults contaminate the ground with the rise and fall of the soil water. These evils would be greatly reduced by the construction of a large sewer through this part of the district, thus affording the owners of property the opportunity of sewer connection, which they would gladly avail themselves of.

There were, at the beginning of the year 1874, about fifty cow-stables in this district, containing about 500 cows, but owing to a judicious regulation introduced by the Board, a large number have been discontinued, and a material improvement effected in those that remain; yet I believe after considerable investigation and careful observation, that the presence of those remaining will be found detrimental to the general health, and it will become necessary to cause the removal of all beyond the city limits.

The goat nuisance exists here as in other sections of the city. Not only are they destructive of property,—a large amount of damage is yearly done by them—but the filthy manner in which they are kept or allowed to roam at large, makes them obnoxious in other respects. Very many are kept in the apartments of their owners—they are also found in cellars—their usual place of rendezvous at night is in the lower hall-ways of the house of their owners. An ordinance passed, outlawing them, would speedily relieve the city of this nuisance.

The condition of stables has materially improved during the administration of this Board. The general inspection of such during that time has resulted in supplying nearly all of them with a covered manure-box or vault, in which the manure is kept for frequent removal.

There are two glue factories in operation in this district, the proprietors

of which do all they can to render their business as unobjectionable as possible, adopting such suggestions made by the Board or its officers as may tend to abate any bad or objectionable feature in their operations.

The phosphate manufactories, upon Newtown Creek, have been a matter of serious annoyance to the adjoining neighborhood. At present the annoyance is not so great as formerly, owing to compliance with a recent order of the Board of Health.

The Williamsburgh Gas Company have their works in this district, and at times are a source of annoyance to this section, owing to their process of purification. They are still using the lime-process, which is very objectionable, owing to the large amount of sulphuretted hydrogen which is given off when the purifiers are opened. This matter is under investigation.

There are four large petroleum refineries in this district, in active operation, which may tend to some slight extent to vitiate the atmosphere, yet this matter is but a trifle in comparison to some of the greater evils adjacent to us in Queens County. These refineries are always open to the inspection of the Sanitary Inspectors, and everything is done by the proprietors to facilitate investigation in every particular.

The receiving dock for offal, etc., has been located in this district, at the foot of North Fifth Street, during my incumbency, and has been made the subject of careful and frequent inspections. The night-soil, dead animals, offal, and garbage of the entire city are received at this point, which is by no means a central location; and it must be apparent that the establishment of a second dock in the Western District would facilitate the work of cleansing the city.

Too much time is consumed by the carts of the contractor in going to and from the dock at present; and in warm weather the time thus spent could be better employed in shorter and more frequent trips. The work is being done at present in a more satisfactory manner than formerly, but the methods are not yet perfect; observation and experience will in time remedy many of the defects of this service.

I have, during my connection with this department, made a large number (153) of inspections of contagious diseases; the majority being small pox and diphtheria. The result of the practice of isolation in variola has been very satisfactory, the mortality being lighter than in former years when removals were practiced; the disease, owing to disinfection and fumigation, which are thorough in all cases, has been held in decided check, while the confidence of the profession and the people has been very largely increased by this wise and humane regulation. Some of the apartments that I have visited, where this disease has been quarantined were found in an unsanitary condition; window curtains of cotton and woolen materials, carpets on floors, upholstered furniture, and other articles likely to afford a medium for the spread of the disease, were allowed to remain in the rooms. Stoves were found in the sick room in full operation, the temperature of the room in some cases as high as 85°; windows and doors closed to prevent the ingress of air. These conditions prove unmistakably that many do not appreciate the value of pure air and a low temperature in this disease. Clean dry floors, plain walls, uncurtained windows, shutters or blinds of wood, to regulate the light, a table to hold the necessaries for the patient, a beadstead plainly furnished with a straw or husk mattress, together with a suitable amount of covering, and a chair or two; and above all, thorough ventilation, are all that is required for the room of a patient suffering from this disease.

Diphtheria has also engaged a portion of my time and attention, and what I have learned of it has led me to the conclusion that isolation and disinfection should also be practiced with it. Too much stress cannot be laid on isolation in this disease. It has been my custom to make a thorough and careful investigation of each house wherein a case occurs, to discover if any cause exists therein, as defective traps to sewers and sink-pipes, obstructed sewers, wet or damp cellars; to enforce repeated disinfections, and a careful fumigation of the infected premises at the termination of the case.

In the course of my investigations and inspections I have met with a diversity of character and a corresponding diversity of treatment. With the more intelligent portion of the community courtesy has been the rule; with those less fortunate in their earlier life and education I have occasionally met with rebuffs and incivility, but even these would after awhile change their treatment and actions when they learned and realized that the object of such visits was not an idle, officious curiosity, but a desire to promote their interests and welfare. The people are beginning to appreciate the benefits of sanitary investigation, and to a certain extent not only do not try to evade them, but facilitate them by personal assistance and information.

Respectfully submitted,

G. W. HALL, M. D.,
Sanitary Inspector.

January 1, 1875.

SANITARY INSPECTION DISTRICT.

REPORT OF T. P. CORBALLY, M. D.

B. A. Segur, M. D.,

Sanitary Superintendent.

Sir:—In the following report which is respectfully submitted, an attempt is made to give the result of inquiries in regard to the sanitary condition of the 16th, 15th and 18th Wards, lying in the Eastern District of this city, constituting the inspection district to which I was assigned and in which daily inspections were made for about nine months. Special attention has been directed to the 16th Ward because of the enormous mortality from which it has suffered, because, in my opinion, this mortality has occurred, not as an accidental and inevitable result arising from extraordinary causes, but as the logical consequence of certain faulty conditions inherent in the locality, or in the people, or in both.

The subject of this inquiry is of deep interest both to the City at large, and to the people who are the immediate sufferers from the dreadful ravages that disease, in various forms, is constantly making among them; it is important because about 42 per cent. of the whole population of the ward is of foreign birth, and nearly all of these are Germans; and it is of peculiar importance because the most influential among the people do not admit the existence of any extraordinary mortality, and persistently deny that they suffer, in this respect, more than other parts of the City. Those who admit that the mortality is severe, argue that it is due to deaths amongst the aged immigrants who come to live in the ward, many of whom, having limited resources, are obliged to live in cellars and other unhealthy abodes, and often suffer from want of the necessaries of life. But it is difficult to understand why this ward should suffer so much more, from these causes, than others that have a larger proportion of their inhabitants of foreign birth, many of whom are exposed, on arriving here, to the same hardships and the same privations. The following table shows the ratio of the foreign-born population to those of native birth, and it will be observed that in three wards, the 5th, 6th and 12th, the foreign element is greater than in the 16th.

NATIVITY OF THE POPULATION OF CERTAIN WARDS.
(CENSUS OF 1870.)

Ward.	Natives.	Foreign born.	Native.	Foreign born.	Whole population.
16	15,298	11,140	100	73	26,438
15	12,908	5,498	100	42	18,406
18	7,409	4,117	100	55	11,607
5	11,300	9,190	100	81	20,490
8	5,625	3,967	100	70	9,592
6	16,052	12,244	100	76	28,290
12	9,616	8,686	100	90	18,302

A comparison of the ratio of mortality in other cities, as well as the death rate in other wards of Brooklyn, will show that the loss of life in the 16th Ward is enormous. In London and in Paris the death rate is less than 23 per thousand, and in the terrible climate of India the ratio is: in Bombay, 31, and in Madras, 42 per thousand. In Berlin it is 37, in Vienna 35; and in New York city it is but 28 per thousand.

In the 16th Ward, with a population of 26,438, there were in 1873, 1,155 deaths. If the death-rate were equal to that of London or Paris, the whole number of deaths would have been only 618. This gives 537 deaths that might have been prevented, and would have been, if the same care were given to sanitary regulations that they receive in cities in which the health and the lives of the citizens are more carefully considered. The death-rate for the entire city, during the same year, was 27.6 per thousand, and at this ratio the deaths in the 16th Ward would have been only 729; that is, 426 lives would have been saved during the year, in one ward. One more comparison will be interesting, because of the large proportion of foreign born citizens in the ward. The 5th Ward had a death-rate of 25 per thousand, which would give, for the population of the 16th Ward, 660 deaths instead of 1,155, or 495 deaths fewer would have occured in the 5th Ward with the same population than occured in the 16th Ward. The following table shows the excessive mortality in the 16th Ward as compared with other localities.

Ward.	Population.	No. of deaths in 1873.	Death-rate per 100	No. of deaths if rate were 23 as in London	No. of deaths if rate were 25 as in 5th W'd	No. of deaths if rate were 27.6 as in the entire City
16	26,438	1,155	45	618	660	729
15	18,406	431	23	431	460	508
18	11,607	446	38	267	290	310
5	20,490	519	25	471	519	565
8	9,592	344	35	220	239	264
City,	396,099	10,968	27.6	9,110	9,902	10,968

The pursuit of this inquiry has been attended with many perplexing circumstances, and often, with insurmountable difficulties, because there are no records to furnish the data necessity for such a study, and besides there are peculiar difficulties arising from the novelty of many of the questions raised; still, testimony can readily be borne to the uniform kindness with which, in almost every instance, the inspector is received in his official capacity; to the readiness with which measurement of rooms, and apartments was permitted; to the willingness, in most cases, to give the desired information; and, above all, to the general disposition to comply with the orders and regulations of the Board of Health when they were properly

understood, and it was seen that they were intended for their benefit. Yet, the severity with which the former regulations requiring the removal of all persons sick with small-pox to the hospital at Flatbush, were enforced, has caused a very strong prejudice in that section against all forms of sanitary regulations; and the scars left by the epidemic of 1872 will be removed only by time, and by the manifestation of greater sympathy with the people in times of affliction. This severity made the first visits of the inspector, in many cases, an unwelcome one; and has also led to the attempt to conceal cases of contagious disease. It is true that the Germans, as a people, are disposed to look with jealousy on anything that seems like an invasion of their social customs or personal rights, and to this, their want of familiarity with our language, and their consequent partial isolation, has contributed much. But this characteristic is not altogether of recent growth; it has been brought with them from their native land, and von Pettenkafer reminds them of it in his address to the people of Munich, in which he says:—"Even in free England whatever relates to the administration of public health is directed, not by the majority of the people, but by a small intelligent miniority." (Zweite Vorlesung.) The question for consideration, then, is the cause of the enormous mortality in the 16th Ward. If we omit small-pox, which is one of those epidemic diseases that do not arise from local causes, although they may be intensified by them, we will have a remarkable uniformity in the ratio of deaths in the different wards in the years 1872 and 1873, mostly from endemic causes.

Table showing the death-rates by wards in 1872 and 1873; from the 16th small-pox is excluded.

Ward.	Death-rate per 1,000. 1872	Death-rate per 1,000. 1873	Ward.	Death-rate per 1,000 1872	Death-rate per 1,000 1873
16	*47.00	43.00	22	33.33	29.00
18	41.00	38.00	11	27.91	23.00
8	38.42	35.00	5	26.84	25.00
6	36.85	33.00	10	26.96	22.00
12	36.76	32.00	17	26.56	30.00
9	36.19	28.00	13	25.65	21.00
14	34.38	30.00	4	24.84	19.00
21	33.59	31.00	1	22.52	20.00
2	33.23	24.00	20	21.59	19.00
15	31.24	23.00	7	20.38	22.00
19	30.81	27.00	3	19.23	13.00

The first fact we notice is the great mortality in our city's low-lying sections, however widely separated. An examination of the table shows that the 16th and 18th Wards, lying on Bushwick Creek and Inlet, and on Newtown Creek in the Eastern District, have the highest death rate; while the 8th, 6th and 12th, lying on Gowanus Creek and including the low grounds of Red Hook Point, follow very closely, and very uniformly in the rates of mortality. But location is only one of many factors that must be considered when attempting to explain the causes of the excessive mortality of some wards; these causes may be divided into two general

* The death-rate in the 16th Ward for 1872 was 59.93; deducting 292 cases of small pox from the number of deaths, the ratio of the remainder will be 47 per thousand, as given above.

classes: those arising from local conditions and those that depend on conditions of a personal nature.

Among the local conditions may be enumerated the geological formation of the ground and its physical constitution; marshes and watercourses, their obstruction, filling and drainage; ground water; dwellings, their construction and surroundings; the contamination of the soil from privies, stables, factories, slaughter-houses and the like; the contamination of the air from ground exhalation, privies, sewers and filth in the streets and in the yards. Among the personal conditions may be considered the vital condition of the people, their social, domestic and personal habits, their occupations, food, drink, etc.

The different *wards* of the city are arbitrary divisions made for political convenience, and, in localities sparsely settled, but growing, their characteristics are constantly changing. These divisions are very unsuitable for the puposes of sanitary inquiry, and the statistics formed from them are unreliable and unsatisfactory for many reasons. They never permit us to see the worst side of mortality lists and very rarely the best. In this city, the 3d Ward is, perhaps, the only exception; there is a great uniformity in the nature of the ground, the elevation and drainage, and in the character and habits of the people. Thus in 1873 there were only 13 deaths for every 1000 inhabitants in this ward, while in the 16th there were 43; nearly 3½ times as many. But the 16th Ward comprises two parts, very distinct from each other, both in the nature of the ground and in the habits and nationality of the people; just as distinct as are the 5th and 4th Wards. If we separate from the 16th Ward that portion lying west of Union Avenue, we take away about one-fifth of the area, and about a fifth of the population. The population of the east side would then be, 26,431 less 5,288, or 21,150. As at present estimated, at 43 per 1,000, the deaths in the western part would be one-fifth of the whole, 231, and on the east side 924. But a more correct estimate would be to take the western part at 21 per thousand, the rate given for the 13th Ward to which it more naturally belongs; the deaths in this part would then be 111; and on the east side there would be 1,044 deaths in a population of 21,150; the death rate for that part of the 16th Ward commonly known, in the locality, as "Dutch Town," would then be 50 per thousand, which would be nearly four times the mortality of the 3d Ward. If this death rate should continue for a length of time, the average duration of life would be only 20 years, so that in a short time the ward would be depopulated if left to natural increase. A topographical map for sanitary use would be very convenient, if not necessary; then a medical geography, based on the physical condition of the territory on which the city is built, could be arranged, and tables and statistics kept in the office of the Registrar of Vital Statistics would give a presentation of the mortality in different localities, which would have some sanitary significance.

The Eastern District comprises six wards; the 13th, 14th, 15th, 16th, 17th and the 18th. These form a pretty regular isoceles triangle, having its base on the East River, extending from Newtown Creek to Wallabout Bay, and its apex at East New York; the sides are formed by Newtown Creek and the city line on one hand, and by Broadway on the other. This triangle is intersected by an extensive marsh, lying nearly parallel with the base, and extending along Flushing avenue from the head of Newtown Creek to Broadway. The base of the triangle is pierced, nearly in the middle, by the remains of Bushwick Creek and inlet, which divides the lower part of the triangle into two nearly equal parts. This inlet was, until a

comparatively late period, navigable for very large vessels beyond the intersection of Grand Street and Bushwick Avenue.

If now we turn to the map of the Western District, we find it very similarly situated; much of the 6th Ward, and nearly all the 12th being marsh ground filled; this is penetrated by Gowanus Creek, and the 8th is bounded partly by Gowanus Bay. If we examine the death-rate of the different wards for the two years given below, we will find the highest mortality in the 16th and 18th. The next highest in order, is in the 8th, 6th and 12th, as shown in the following table.

Wards in the Eastern District.	Death-rate per 1000	Ward.	Death-rate per 1000	Wards in the Western District.	Death-rate per 1000.	Ward	Death-rate. per 1000.
	1872		1873		1872		1873
16	47.00	16	43.00	8	38.42	8	35.00
18	41.00	18	38.00	6	36.85	6	33.00
14	34.38	19	30.00	12	36.76	12	32.00

The 16th Ward extends from Broadway, on the south, to Ten Eyck Street on the north, and from Bushwick Avenue, on the east, to Union Avenue. Besides this, there is the quadrangle already alluded to, bounded by Union Avenue, Broadway, Ninth Street and South Third Street. About a third of the area of that part east of Union Avenue was formerly a marsh, most of which was below the level of tide water, and through this part it was proposed to construct a ship canal, to extend from Newtown Creek to Wallabout Bay. The most elevated ground in the ward is in the extreme north east corner, at the intersection of Ten Eyck Street and Bushwick Avenue. This high ground, consisting mostly of sand and drift, dips slowly to the south and west, and disappears beneath the marsh near the line of McKibben and Lorimer Streets. On the east it inclines rapidly and disappears beyond Bushwick Avenue to reappear again as high ground in the 18th Ward, just east of Flushing Avenue, most of the intervening space being still covered with tide water.

The 15th Ward extends from Ten Eyck Street on the south to Van Cott Avenue on the north, and from Morrell Street to Union Avenue. North Second Street divides it into two nearly equal parts; the South Side, adjoining the 16th Ward occupies high ground and has nearly all the population. The North Side, lying on Bushwick Creek, is but sparsely settled, a fact that may account in part, at least, for the low death-rate, as compared with the other wards lying near the marsh.

That part of the 18th Ward east of Flushing Avenue is mostly high ground, and the death-rate in it has been comparatively light. The other part, lying between Bushwick and Flushing Avenues, Newtown Creek and Meeker Avenue is an extensive marsh except a small strip lying along the line of Meeker Avenue. The tide still rises over this marsh as far as Johnson Avenue, indeed as far as Flushing.

The 5th Ward may be compared with those already described, because it is the most densely populated ward in the city; because many of its inhabitants are of foreign birth, and because so many live in tenement houses. The 5th Ward extends from Bridge Street to the Navy Yard, and from Myrtle Avenue to the East River. A high ridge runs through the ward near the line of Front Street, thence the ground inclines to Myrtle Avenue on one side and to the East River on the other. The tide water of Wallabout Bay formerly extended as far as Hudson Avenue, and there is some *filled ground* in that part of the ward.

The 16th Ward has an area of 262⅓ square acres, of which 157⅓ acres are devoted to building lots, and the remaining 105 acres are laid out for streets and walks. The area of space devoted to streets, is to that under building lots, as 2 to 3. The building area gives 3476.7 building lots, 20x 100 feet each, which on the census of 1870, gives 7.6 inhabitants to each lot. To get a more accurate view of the relation of the inhabitants to the ground on which they live, it may be estimated that there are 696 of the whole number of lots vacant, or occupied by factories or stables or used for other purposes. This would leave 2,730 lots occupied by dwelling houses, and would give 9.7 inhabitants to each occupied lot. The total population, according to the census of 1870, was 26,438, of whom 15,298 were natives and 11,140 of foreign birth; the ratio of which is, 100 natives to 73 foreign born, and there are 100 inhabitants to each square acre.

The 15th Ward has an area of 242.51 square acres of which 106.97 acres are allowed for streets and the remaining 135.54 acres are divided into 2,952¼ building lots each 20x100 feet, which gives 6.3 inhabitants to each lot. The total population in 1870 was 18,406 of whom 12,908 were of native birth and 5,498 foreign born, being 100 natives to every 42 of foreign birth, and 76 inhabitants to each square acre.

The 18th is the largest ward in the city. It stretches along Broadway, from Flushing Avenue to East New York, and then follows the city line and Newtown Creek to Meeker Avenue, and along Bushwick Avenue to Flushing Avenue. A very large portion of the population lies along Broadway from Flushing Avenue to Gates. The rest of the population lies along the marsh from Flushing to Meeker Avenue, and it is among these that the greater part of the deaths occur. As the population is limited chiefly to these two localities details would be of no interest.

The 5th Ward has an area of 113.97 square acres, 35 of which are used for streets and the remaining 78.97 acres are divided into 1,714 building lots, each 20x100 feet, which gives 12 occupants to each lot. The population in 1870 was 20,470, of whom 11,300 were natives, and 9,190 were of foreign birth, which gives the ratio of 100 natives to 81 foreign born. The 5th is the most densely populated ward in the city, having 180 inhabitants to each square acre. It is estimated that there are about 348 lots in the ward occupied by stores on the water front, the gas works, factories of various kinds, stables, vacant lots, &c. This would leave 1,366 lots actually occupied by dwellings, and gives 15 persons to each lot 20x100 feet, leaving 133 square feet to each individual in the ward, or standing room of 11 by 11 feet each.

The following table gives the figures in the above description condensed and classified. The population and nativity have been given in my first table.

Ward.	Acres in Ward.	Acres in Lots.	Acres in Streets.	No. of Lots 20 x 100 ft. in the Ward.	No. of Persons to a Lot.
16	262.33	157.33	105.00	3426.70	9.7
15	246.51	135.54	106.97	2452.24	6.3
18	2058.49	1418.94	639.55	29382.82	....
8	1576.18	1142.54	433.64	18220.02	....
6	297.61	199.00	98.61	4334.36	....
12	509.59	350.81	158.78	7640.78	....
5	113.97	78.70	35.27	1714.08	15.

DENSITY OF POPULATION AND DEATH-RATE BY WARDS.

Ward.	Population to Sq. Acre.	Death-rate for 1872.	Death-rate for 1873.	Sq. ft. to each Inhabitant.
1	71	22.52	20.00	
2	99	33.23	24.00	440
3	75	19.23	13.00	573
4	109	24.84	19.00	398
5	180	26.84	25.00	243
6	95	36.85	33.00	465
7	48½	20.38	22.00	....
8	5½	38.42	35.00	....
9	9	36.19	28.00	....
10	64	26.66	22.00	....
11	97	27.91	23.00	450
12	36	36.76	32.00	....
13	92	25.65	21.00	473
14	76	34.38	30.00	578
15	76	31.24	23.00	565
16	100	29.93	43.00	432
17	25	26.56	30,00	....
18	5½	41.00	38.00	....
19	36	30.81	27.00	....
20	47½	21.59	19.00	....
21	16	33.59	31.00	....
22	10	30.33	29.00	....

It will be obvious, from the tables, that in this city density of population has less to do in increasing the mortality than the nature of the soil; compare for instance the 4th and 16th Wards, or the 3d and the 14th. It cannot be denied, from the facts here given, that nationality has any influence on the mortality, but it certainly is not the principal cause of the excess, as may be shown by comparing the 5th Ward with the 6th, 8th and 12th, in all of which a very large proportion of the residents are of foreigh birth, and of the same nationality. The Census reports include children of all ages among the population, and, we can readily see that if adults alone were compared, the foreign would be far in excess of the native population. In all countries, and in all large cities especially, the excess of mortality will be among the poor; they are driven into the most unhealthy localities, in the endeavor to find cheap rents, and they are unable to surround themselves with those sanitary improvements that are now deemed necessary for the preservation of health; the sewer connections are defective, and filth is allowed to accumulate and rot in the streets, and, when it has given off much of its foul and poisonous exhalation, it is carted away to be deposited in the nearest vacant lot. Every one knows that the air is the most efficient agent in the transmission of disease; its action is incessant, and entirely independent of the will of those who breathe it. No matter how unhealthy the locality in which the poor man lives, he and his family are forced, under pain of immediate suffocation, to breathe the contaminated air with which they are surrounded. The influence of this poisoned air is the more dangerous, because the noxious principle often escapes our senses, as in scarlatina, small pox and similar diseases, and pulmonary absorption being exceedingly active, the poison enters immediately into the blood. Thus we find that miasmatic diseases are the most deadly of all, and it is to this class that all the great epidemics,

as well as the most important of the endemic diseases belong. No class of diseases is better understood than those of malarial origin. Rochard says that, "if the nature of the poisonous agent has thus far escaped analysis, we know at least the conditions under which it is produced; the extent of its sphere of action, the manner in which it enters the system, and the results to which it tends; and, more important than all, the means of prevention is certain,-and has no limit except in our inability to destroy all the sources whence it emanates, for, the cause of its existence must be in the special conditions existing in the locality in which it prevails. Those conditions depend, most frequently, on the nature of the ground, and on the exhalations that emanate from it, and on organic substances produced by it. Nearly all endemic diseases are of miasmatic origin,--they have one characteristic in common, that they are always found to be inherent in the locality."

Intimately associated with their local origin, endemic miasms never pass beyond the limits in which they are generated. They may, and do, at times, acquire an increased activity under the influence of occasional causes such as inundations, the overflowing of rivers, abundant rain following a long drouth, or an unusual elevation of temperature, but they never extend to distant localities like epidemic diseases, because the principle of infection in which they have their origin, is not of a nature to be reproduced in the system, and because it is not communicable. The necessity of supplying pure air by preventing the pollution of the ground on which we erect our dwellings, is unquestionably the most important proposition with which Public Health Boards have to deal; in comparison with its magnitude all other questions of sanitary administration are of secondary interest. Eigenbrodt says that, "the pollution of the earth by organic putrescible matter has long been recognized, and is now recognized, as the most important element in the production of Abdominal Typhus." And again, "it is undoubted that the pollution of the ground with waste material has a most important influence in spreading epidemic cholera." Experience has long since proved that many of the most obstinate and intractible diseases met with in our large cities, as scrofulous affections and many of the diseases of children that resist every mode of treatment, readily yield to a pure country air. What efforts have been made to prevent so great a danger—to remove the cause of so much disease? What has been done to prevent ignorant people from doing that which proves so injurious to their health and that of others, and is the cause of so many deaths year by year? It is the duty of the present report to point out what has not been done, and, more than that, it will be necessary to show what neglect, and criminal neglect on the part of some, has done to increase the danger complained of, and thus to spread disease and swell the lists of mortality.

It is estimated that at least one-third of the area of the 16th Ward, one third of the 15th Ward, and one-fourth of the 18th has been marsh ground, or ground covered with tide-water. This makes for the three wards an area of 683 acres, and, if to this be added the marsh ground in the 17th, and that in the 14th Wards, lying on Bushwick Creek and Inlet, it will be a very moderate estimate to allow 800 acres for the area of the marsh ground in the Eastern District. Much of this marsh has already been filled, and Bushwick Creek, which at no very remote period had a depth of water sufficient to float large vessels as far as Grand Street in the 18th Ward, is now virtually filled, a small channel, allowing the tide water to run up as far as Leonard and Withers Streets, only remain. The susbstance deposited is mostly organic matter and is fermentable and putrescible in

the highest degree. Figures would scarcely convey an adequate idea of the enormous quantity of this substance, and of the amount of poison it contains. Nearly all the filth and garbage of the city, thousands upon thousands of tons annually, have heretofore been thrown into vacant, and especially into the low lots in the City; and the fact that, at least one hundred tons of garbage are now brought, weekly to the offal dock, shows how much of it has heretofore gone to fill up sunken lots.*

Thousands of tons of offal are carried away from the many slaughter houses and tripe-cleaning establishments, and tossed about by the tide over hundreds of acres of the marsh in the 18th Ward before it can reach tide-water. The active, putrescible principles are extracted from it by the action of the water, and by trituration with grass and other substances met with in the marsh. This active principle is deposited to form the foundation for future dwellings, and the comparatively harmless organic fibre is the only part that reaches deep water.

But this is not enough of nastiness and deadly poison to be deposited around our dwellings; street filth, garbage, house offal of all kinds, offal from slaughter-houses and tripe-cleaning establishments, and in many cases the emptying of carts by night-scavengers, are bad enough, but Brooklyn should look upon it as her deepest disgrace, as her greatest shame, that nearly every house in the 16th and 15th Wards connected with sewers, are drained into the main sewer in Union Avenue, and this sewer discharges its contents, not into tide-water, not into an arm of the sea, nor even into a large stream of water, but on the marsh land bordering Bushwick Creek, and in the midst of a thickly settled neighborhood. The discharge of this sewer is washed to and fro by the tide until all its active principles are extracted, just as the diamond hunters wash the sands in Brazil in their eager search for the precious gems.

One similar case may be cited: "Cholera appeared in Pekin at the close of the summer of 1862; it reappeared in 1863 and 1864. We can readily imagine the frightful proportions that an epidemic of this kind would assume in a city like Pekin. The progress of the scourge presents one very instructive circumstance, while the Tartar City, more healthy because in a better sanitary condition, was scarcely visited, the disease became domiciled in a quarter of the Chinese city in which, in consequence of neglect on the part of the authorities, a large open cesspool was formed, into which flowed all the waste from streets and drains. During three years this part of the city was wasted by the epidemic before the police thought of removing this frightful mass of filth by opening the drains and allowing

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* Middletown Street, between Broadway and Harrison Avenue, was filled with garbage and filth to a depth of 15 or 20 feet. The marsh lying between Bushwick and Johnson Avenues and White Street was, during the season of 1873, made the *dumping* ground for the 16th Ward, and parts of others lying near it; hundreds of loads were there deposited. That part of the marsh on Bushwick Creek bounded by Lorimer Street, Van Cott Avenue, Leonard and Bayard Streets, was filled to the depth of about three feet with street manure, ashes and garbage. The triangular piece of ground bounded by Union Avenue, Fifth Street and North Ninth, was, for a long time, the dumping ground for the 13th and 14th Wards. The square bounded by Union Avenue, Withers and Frost Streets, was for a long time also the depot for manure brought from New York, to be thence transferred by railroad or otherwise to different parts of Long Island. In the low ground between Frost, Withers, Leonard and Ewen Streets the contents of all the sewer-basins in the neighborhood was emptied; the contractor no doubt believed that it could be no more harm to deposit the contents of sewers and sewer basins in vacant and low lots than to allow the contents of the same sewers to be discharged upon the same lots, as they actually were within about 200 feet.

it to escape."* When the filth was removed the epidemic gradually disappeared. How many years will the like nuisance be tolerated in Brooklyn? Besides the Union Avenue sewer, there are other smaller ones that contribute to spread and to extend the evil.

Chemical analysis shows the enormous pollution of the ground by human and animal excrements, and it is astonishing that this condition as the cause of disease has for so long a time received so little attention. Eigenbrodt says: "The method of dealing with human excrement that we find most common in this the nineteenth century, is in the highest degree barbarous and unreasonable."

Ziureck has made an estimate of the amount of animal waste produced daily in the city of Berlin, containing 700,000 inhabitants.† The figures may be changed so as to represent a population of 450,000. This gives a daily amount for this city, of excrement 44 tons, of urine 440 tons, and of liquid garbage 2,700 tons.

The figures for the city of Brooklyn annually would be, of excrement 16,060 tons; urine, 160,600 tons; liquid garbage, 985,500 tons.

If, of the 45,000 people in the 15th and 16th Wards in 1870, one fourth lived in houses connected with the Union Avenue and other sewers, which is not an excessive estimate if we consider the number of tenement houses, we will have the waste from 11,000 people emptied on the marsh from this source alone. Waste emptied on Bushwick marsh daily: excrement, 1 ton; urine, 11 tons; liquid garbage, 67 tons. This will, every year, amount to: excrement, 401 tons; urine, 4,015 tons; liquid garbage, 24,637 tons.

It is not claimed that these figures are absolutely correct, yet the data from which they have been taken admit of so close an approximation to truth that they may be very safely taken as representing the relation between population and soil pollution. Lehman estimates that waste from the human body contains six per cent. of organic matter, a little less than one per cent. of putrescible matter, and the rest consists of water, salts of lime, phosphates and ashes. Of the 4,416.5 tons consisting of urine and fæces discharged annually by the Union Avenue sewer, there would be: organic matter, 264.99 tons; putrescible matter, 44.16 tons. Add to this the liquid garbage, waste from stables, street gutters, factories, butchers' shops, and the like, and we are not surprised at the exclamation of Eigenbrodt: "It is enough to make the hair stand on our heads to contemplate the condition of our cities."

The condition of the Thames in London in former years is well known, and the enormous expense incurred in carrying the immense sewers far below the limits of the city, is evidence of how fully the danger was appreciated; but it bore no comparison to the condition of the Union Avenue, and other sewers of this city. The great sewer beginning at Margaretta Street and running through Knickerbocker Avenue, and emptying its contents into the marsh at Johnson Avenue, will be a more serious nuisance, in proportion to its greater capacity to convey filth. At present, as there are few if any houses connected with it, it is felt only as an *expensive improvement* running through an uninhabited part of the 18th Ward.

Pettenkofer estimates that about one-tenth of the human waste is re-

*Pekin et ses Habitants—Etude d'Hygiène par le Dr. G. Morache—Médicin—Major de l' armée française.

† Die Brunnenwässer, Wasserläufe and Bodenverhältnisse Berlins von O. Ziureck. Berlin, 1869. p. 26.

TABLE VIII.

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES,

REGISTERED FOR THE YEAR ENDING DECEMBER 31, 1872.

CAUSES OF DEATH	NATIVITY: U. States	NATIVITY: Foreign	NATIVITY: Color'd	Under 1 year	1	2	3	4	Total under 5 years	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100 and up	Total by Sexes	Total both Sexes.
	M. F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M. F	M. F
Class I. ZYMOTIC																															
Order 1. *Miasmatic*																															
Small Pox	6 286	58 68	8 6	15 16	13 9	10 4	3 11	8 21	55 195	187	38 29	36 28	18 22	17 18	28 10	12 22	17 12	9 5	6 5	3 8	2	1 1	3 1	1 1						384 353	737
Measles	1 35			7 8	1	16 9	4 6	2 1	8 24		1 1																			34 37	71
Scarlatina	39 153	4 11		5 12	4	26 26	10 10	31 21	116 92	29 38	14 25	2 4	2 1		3				1										103 161	264
Diphtheria	6 100	1		10 7	1	20 18	20 25	10 14	67 87	12 11	6 1	1		1 1	1			1					1						91 93	184
Croup	10 159	7 1	1 1	12 16	5 10	33 42	11 8	31 26	145 152	26 24	6 1																		187 196	383
Quinsy	1 5	2 1		2		1	1		6		1									2									3 6	9
Whooping Cough	58 58	2		11 52	2 4	12 6	6 3	1 58	55	4																			78 580	658
Typhus Fever	4 3	3 2				1		1		1 1		1 1	1 1	1 1	1 1		1		1 1											4 8	12
Typhoid Fever	75 42	28 34	1				1 2	1 2	2 1	2 1	2 7	2 9	10 7	11 11	10 7	10 7	8 3	5 3	4 1	5 3	1 3	3	4 1	1 2	1 1					63 50	149
Erysipelas	53 27	7 5	1	1 19		2 2	1		27 21	1 1	2	2 1			1	1 2	1		1 5			1	2		1		1			40 32	72
Puerperal Fever	14	14												1	10	6	7	4												28 28	56
Pyæmia	5 11	6 11		1			1	1	1 2	1 2		1 1	1 1	1 5		2 2	2		3 1		2 1	2								11 22	33
Septicæmia	3 4	2					3 1		1		1		1			1														3 6	9
Dysentery	52 43	19 23		14 14	1 1	11 12	6 7	4 1	59 62	6 2	1 1	3 2	1 2	2	1 3	3 2	4 4	1 1	3 2	3 3	2 1	3 2	2	1	1	1				71 106	177
Diarrhœa	100 105	21 23		50 62	2	2 21	26 4	4 1	95 95	1		2		3	1 2	2 5	2		4 2	1 2	4	2	1	1	1	1				121 198	243
Cholera Sporadic	1	1																	1											1	1
" Morbus	13 13	11 14	1	4 1		1 2	1		8 3	1 1		1	1	2 2	1 2	1			3 1	2 3	1	1	2	2	1	1				23 25	51
" (Infantum)	617 636	2 5	11 6	4 5	4 25	21 37	139 143	12 21	2 4	819 840	4																			1659 1641	3300
Enteric Colitis	12 6	1 1	1	8 7	1	1 2			12 6												1 1									13 7	20
Cerebro Spinal Meningitis	118 107	14 19	3	17 10	3	15 12	12 9	11 14	12 59	13 21	18 25	17 11	12 6	7 4	6 3	2 2	5 1	6 1	1 1	9 3	6									112 196	308
Remittent Fever	36 39	17 22	1 2	6 3		9 3	1 3	2 6	18 16	2 3	4 4	1 2	2 3	5 4	4 4	5 5		1 5	5 5	3 2	1 1	3 2	4	2	1	1				57 61	118
Intermittent Fever	10 5	8 8	1	3 1		1 1	2 1		4 2	1 1		1 1		1 2	3	2 1			1		3 2	1		1	1		1			18 13	31
Relapsing Fever	1											1																		1	1
Total Miasmatic Diseases	1364 1828	212 270	27 22	149 191	31 20	130 147	263 192	192 3	1148 1	280 82	145 140	103 96	45 58	42 47	55 57	54 56	35 51	29 38	15 28	27 22	19 15	11 31	10 21	5 13	11 10	3	3	1 1	1	2666 2988	5654
Order 2. *Enthetic Diseases*																															
Syphilis	8 5	1 1		6		1			3	1					1				1 1			1								3 6	9
Hydrophobia	2 1	1								2 1	1																			2 2	4
Malignant Pustule	1									1																				1	1
Total Enthetic Diseases	9 7	1 2		6 3		1			3	3	1				1				1 1			1								11 9	20
Order 3. *Dietic*																															
Inanition (Privation, &c.)	57 41	3	1	75 38	1	2			76 40					1	1				1			1				1				77 44	101
Alcoholism { Intemperance	1	16	17											1 1	2 3	2 2	1 1	7	5 3	1	2		1	1						20 21	41
Alcoholism { Delirium Tremens	7	22	2 1											3	1	4	3	1 4	1 8		2			1						5 31	31
Purpura	3 1	2		2					2 2	1 1			1		1															2 4	6
Total Dietic Diseases	61 45	10 22	2 1	57 10	1	2			58 42	1 1			1	1 1	4 1	8 3	6 2	4 2	11	14	3	1	1 2	2 1			1			104 78	182
Total Zymotic	1015 1880	253 294	29 23	212 273	34 29	133 348	263 192	192 137	1148 1	315 1472	148 144	103 97	45 58	43 48	59 58	43 59	41 53	33 40	27 39	29 27	24 15	12 24	12 22	5 13	11 10	3	1 3	1 1	1 1	3055 3277	6332

TABLE VI.

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES,

REGISTERED FOR THE YEAR ENDING DECEMBER 31, 1879.

CAUSES OF DEATH	NATIVE				UNDER 1		1		2		3		TOTAL UNDER 5 YEARS		5		10		15		20		25		30		35		40		45		50		55		60		65		70		75		80		85		90		95		100 and upwards		Total by Sexes		Total both Sexes
	M	F			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
CLASS II.—CONSTITUTIONAL.																																																						
Order 1.—*Diathetic.*																																																						
Gout																																																						
Rheumatism	10	6	11	4													1	1	2				1		2		1	1	1																						2	20	41
Dropsy	17	22	16	4	1								1		1		2	2			1	1	1	1			1																						10	31	74
Cancer of Stomach	5	5	9		1																		1	1																										1	12	26
" " Breast		11		19		1																			1		1																							30	30
" " Uterus		14		29		1																			1		5																							13	43
" " Rectum, Bowel, &c		1	1	1																																													8	12
" " Head, Neck, &c	1	5	5	1															1								1	1																							6	10	16
" " Face	1	1	1	5																							1	1																							5	6	11
" " (not located)	1	1	1	6																																														2	9	11
Noma Cancrum Oris	1	3							1	2																																									1	3	4
Total Diathetic Diseases	51	72	50	111	2				2			1	3				4	4	4	2	2	2	3		3	1	9	5	16	11	26	9	15	10	23	7	2	9	16	11	1	8	1	2	9	1	1			93	174	267
Order 2.—*Tubercular.*																																																					
Scrofula	10	10	2				6	1	1			1			1		2	1	1			1						1		1																					13	9	21
Lumbar Abscess	3			1	1		1								1		1							1																										3	1	4
Tabes Mesenterica	300	282	12	15	5	13	95	106	16	16	59	51	14	11	6	2	290	273	5	3	1	5			1	2					1	2		1	1	1			1	2	1			1						297	593
Phthisis Pulmonalis	388	320	139	118	21	25	11	8			9	10	1	5	3	1	27	21	5	2	10	5	18	32	53	80	111	108	65	104	96	107	81	71	85	50	47	1	9	35	27	18	15	9	1	3	8	1	4	2	1	738	1365
Hydrocephalus	137	113	1	1	1		69	58	6	1	11	7	15	10		1	171	117		3	1	1																												132	254
Tubercular Meningitis	38	34	2				15		2	1	3	10	9	2		1	76	63	1	1	5	2	1	1		1	1		1				1																	76	32	84
Total Tubercular Diseases	836	757	156	135	29	38	196	173	25	18	82	69	30	28	16	8	638	582	18	14	18	14	19	33	54	82	111	108	65	105	96	109	81	71	87	51	47	2	28	36	28	19	15	11	1	3	10	1	4	2	1	212	419	2 1 4
Total Constitutional	887	829	206	246	31	38	266	231	27	20	91	70	33	28	19	9	712	664	22	16	20	19	22	33	57	82	120	108	68	109	102	116	91	81	110	58	63	3	37	37	29	19	15	11	1	3	10	1	4	2	1	305	593	3 0 1
CLASS III.—LOCAL.																																																					
Order 1.—Nervous.																																																					
Meningitis	100	129	14	15	1		3		4	3	4	1	1	1	18	10	7	6	36	17	8	15	11	10	8	7	3	5	3	5	1	4			3	2		1	1	1			1	1					182	144	326
Encephalitis	12	14	1	1				1		1	1				5	4	10	8	1			1												1															17	11	28
Softening of Brain	9	11	10	1																															1														20	15	35
Apoplexy	8	31	61	91	1	2													2		1		1	1	3	6	1																						89	103	192
Insanity				1																								1																							1	1
Epilepsy	1	3	6	3								1					1	1		1	1		2	1	1		1	1	2						2	2				1										10	11	21
Convulsions	146	3	1	12	9	14	21	24	11	20	55	5	3	3	28	11	14	122	15	11	13	7	7		5	2			4	1	1		1		2	2		1										150	377	527
Paralysis General	53	51	2	33		1		1				1					2	1		1	1			1		1		2	2		1																	1	45	47	92
Sunstroke	9	1	9	11	1		1										1			1			1		8	1	9	3	6	1	8		2		3	1		1	1									50	12	71
Hemiplegia	1		1																																															2		2
Progressive Locomotor Ataxia				1																																													1	1
Chorea		1							1								1																																		1	1
Tetanus	1	3		1			1	1							1		1	5					1		1		1																						4	6	10
Trismus Nascentium	9	6					15	6									15	6																															15	6	21
Congestion of Brain	146		9	29			54	30	1	1	6	11	13	11	7	3	90	68	13	3	12	5	7	10	3	1	7	6	7	5	9	1	6	1	3	2	1	2	6	1	3			5					86	133	219
Total Nervous Diseases	563	604	252	175	12	18	172	143	96	28	107	92	71	58	28	30	628	561	50	35	30	26	21	21	8	3	7	1	15	19	23	2	9	1	10	4	1	21	18	9	10	3	1	1	1	1	1	1	1	505	868	1373

TABLE VIII.—(*Continued.*)

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES.

REGISTERED FOR THE YEAR ENDING DECEMBER 31, 1872

CAUSES OF DEATH	NATIVITY: United States	NATIVITY: Foreign	Colored	Under 1 year	1	2	3	4	Total under 5 yrs.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100 and up.	Total by Sexes	Total both Sexes.
	M F	M. F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M	F	
CLASS III. LOCAL *(Continued.)*																																
Order 2. *Circulatory System*																																
Pericarditis	5	18	10	10	1				5	1	3	1	3	1	1	1	1	1	4	3	1	4	1	1	3	3	1	2	1	2	1	3	1	1	1	1	1	1	15	28	43
Endocarditis	5	4	2	3			1			1			1					1	1	1			1	1	1				1		1		1	1		1				7	7	14
Rupture of Heart	1																																						1		1
Aneurism of Aorta, &c	3		6		1																																		9		9
Hypertrophy of the Heart	7	5	6	2							1			2	3		1	1	1		2		1		1		1												13	7	20
Valvular Disease of the Heart	24	27	23	49	2					1	1			1	1		1	2	1	4	3	2	3	5	1	3	4	4	4	3	6	6	6	2	6	3	8	6	5	6	13	2	3	1	5		3	1	47	76	123
Phlebitis		1																		1																					1	1
Fatty Degeneration of the Heart	3	2	1	3																												1	1		2					3	5	8
Syncope	3	3	1	3															1			1	1	1	1												1		1		4	6	10
Disease of the Heart	29	25	35	23	1	1	2	1	1		1			3	2	1		4			7			3	3	4	3	5	6	6	2	4	1	7	4	3	6	9	4	7	3	1	1	3	3	1		1	2		1	61	38	112
Epistaxis	1						1							1																										1		1
Total Circulatory Diseases	80	85	84	93	5	1	4	1	1		1	2	3	1	6	6	2	5	7	3	4	13	7	8	8	11	7	9	16	14	17	14	15	10	11	16	11	18	17	12	17	18	6	6	6	8	2	3	4	3		1			164	178	342
Order 3. *Respiratory System*																																											
Laryngitis	11	15	6	4			1	2	2		3	5	2	7		1	13	11	1	3		1			1		1	1		1					1			2	1												30	19	49
Bronchitis	101	106	20	25	6	3	65	38	4	8	15	19	12	8	4	1	100	72		1	1					1		1	2	2	1		3	3	1	3	1	3	2	1	3	6	4	4	3	10	1	2	1	2		2			124	115	239
Pneumonia	255	274	127	108	4	10	100	85	10	21	58	52	13	20	8	13	189	181	10	11	11	6	10	6	7	10	18	16	9	16	18	15	17	10	21	10	15	16	16	15	10	10	1	18	4	13	9	14	4	8	2	1	2	1		382	385	767
Pleuritis	5	7	2	8		2	1	1			2	2					5	3	1	1			1				1	1			1	1	1	1						1												7	15	22
" Hydrothorax (Empyema)	3	1	3	3					1		2				1		4				1						1		2	1																						8	4	12
Emphysema (Asthma)	4	2	4	1	1	1	3	1									3	1		1																															8	3	11
Gangrene of Lung (Abscess)	3	3	3	1		1								1			2								1	1																									6	4	10
Congestion	79	68	24	15	2	1	38	28	3	3	11	7	4	1	2	3	56	47	5	2	1	3	3	1			4	3	2	2	4	1	3	2	1	3	3		3	5	2		4	3		1	4	1		2	1	1			103	78	181
Hemorrhage	6	1	7	5	1	1																			2		1		3	1	3		2		2	2		1		1								1				13	6	19
Total Respiratory System	475	459	196	173	14	19	260	155	20	32	91	87	34	76	17	20	368	327	15	19	13	11	13	8	11	11	25	21	16	11	30	20	21	15	33	19	22	23	28	21	15	10	19	20	12	19	16	34	5	12	5	1	1	4	1	671	632	1303
Order 4. *Digestive System*																																											
Gastritis	17	21	16	17		1	7	14			1	4		4	1	1	12	18		1			2			2	2	1	3	4	2	1	2		3	3	1		2	4		1	1	1				2		1				73	81	154
Enteritis	25	31	1	12		3	16	11			1	2		2	1		29	16	1	1	3	5		4	3	2		3	1			2	1	3	1		1	1	1	3					1							29	46	75
Gastro Enteritis	20	17	1	6	1		10	12					1	3	1	1	21	15	2	1	1							1			1	1	1		2			1	1			1										30	23	53
Peritonitis	10	21	9	29			4	4			1		1				6	1	1	2	2	1	3	2		3	1	6	5	5	2	5	1	5	2	6	1	2		1	4	2		2			1						28	50	78
Ascites	1	3	3	7																		1							1	1	1	1	1		1	1		2		1		2				1						6	10	16
Ulceration of Intestines	3	3		2	1		2							2		1	1	1										2						1																	3	5	8
Hernia	4	2	4	2			2																	2														1			1											8	4	12
Hemorrhage from Bowels & Stomach	6	5	2	7		1	3				1			1			1	2				2			1	1	1	1	1			1	1	1			1			2			1			1						8	12	20
Intussusception of Intestine																																																				
Stricture	3	5	4	5			1	1			1	1		1	2	3	4			1		1				1	1		1	1				1			1		1												16	17
Colic and Lead Poisoning	2	1	8	1				1									1							2	1																											10	2	12
Ulcer of the Stomach	1		3																																																4		4
Congestion of Liver	3	3	2	5	1														1																																		5	8	13
Fatty Degeneration of Liver	1	3	1			1													1		1				1																											3	2	5
Cirrhosis of Liver	4	3	15	18																1	2		1	6	4	2	3																									19	21	40
Hepatitis	2	5	21	15									1				1		2	1	1	2	1	1	4	3	5	3	4	3		1	3	1	2		1													26	30	56
Jaundice	8	10	3	7	1	1	6	5		1					6	6			1		1					1		2	1	1	1	1	1	1	1	1									1						11	17	28
Total Digestive System	125	130	104	135	4	7	55	55	1	1	6	9	6	14	4	4	7	67	4	6	6	8	7	10	8	4	6	17	11	18	11	16	11	20	9	20	23	30	7	13	10	11	10	14	1	6	7	1	2	3	1	2		329	372	701

TABLE VIII.—(*Continued.*)

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES.

REGISTERED FOR THE YEAR ENDING DECEMBER 31, 1872.

CAUSES OF DEATH	NATIVITY. U. States	NATIVITY. Foreign	Colored.	Under 1 year	1	2	3	4	Total under 5 yrs.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100 and up.	Total by Sexes	Total both Sexes.
	M. F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F
CLASS III.—LOCAL. (*Continued.*)																															
Order 5.—*Urinary System.*																															
Nephritis	9 3	5 5		2			1	2	3	5 1	1	1	1	1	1	1						1			1			14	8	22
Nephrin (Bright's Disease)	48 29	41 37	1 1	1	1		1	3	4	1 1	2 1	1 1	4	4 3	4 7	6 4	8 4	10	5 8	8 8	8 8	9 5	5 6	5 9	4 1	6		1		89	66	155
Uræmia	12 14	8 5		1				1	2	1 1	2 3		2	1	4 2	2 1	3 1	1		2 1	3	1	1	1	1					20	19	39
Diabetes	5 3	1														1				1 1			2 1	2		1				6	3	9
Calculus	1 1									1	1												1							1	1	2
Cystitis	8 1	5 2	1	1				1	1		1					1			1			2	1	1	5		2	1	1	13	3	16
Stricture of Urethra		2																				1								2		2
Total Urinary Diseases	83 51	62 49	2 1	4	1		1	6	7 1	13 5	3 1	1 1	8	5 1	7 5	8 10	7 7	11 9	11 8	10 10	12 11	16 7	9 9	9 14	10 1	2	10	1	4	145	100	245
Order 6.—*Generative System.*																															
Ovarian Tumor and Dropsy	4	5														5	1	1		1		1								9	9
Pelvic Cellulitis	1	2												2		1														3	3
Metritis (not Puerperal)	7	2										2	1	2	2	2														9	9
Metro Peritonitis (not Puerperal	3	6											1	5	1		2													9	9
Uterine Tumor	1	1												1		1														2	2
Total Generative Diseases	16	16										2	2	10	3	9	3	1		1		1								32	32
Order 7.—*Locomotory System.*																															
Arthritis	1 1	1										1 1																		1 1	2
Necrosis	1	1	1 1									1	1			1														2 1	3
Spinal Disease	5	1 1								1 1		1 1	1		2 1		1					1							5 6	11
Total Locomotory Diseases	6 6	2 2	2							1 1		2 3	1 1	1	2 1	1 1						1								8 8	16
Order 8.—*Integumentary System.*																															
Abscess (Phlegmon)	3 1				1		1			1 1								1			1								3 1	4
Gangrene of Leg	1								1	1																				1	1
Total Integumentary Diseases	3 2				1		1		1	1 2								1			1								3 2	5
Total Local	1025 1451	670 641	30 44	705	515	46	68	291	186	99	112	58	57	1107	938	77	67	63	53	51	57	55	42	72	87	68	71	103	82	84	77	119	84	96	91	101	81	86	72	86	99	57	54	53	86	18	27	17	15	2	5	3	1	2293	2092	4387

TABLE VIII.—*(Continued.)*

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES,

REGISTERED FOR THE YEAR ENDING DECEMBER 31, 1872

CAUSES OF DEATH	NATIVITY: U States M.	U States F.	Foreign M.	Foreign F.	Colored M.	Colored F.	Under 1 year M.	Under 1 year F.	1 M.	1 F.	2 M.	2 F.	3 M.	3 F.	4 M.	4 F.	Total under 5 years M.	Total under 5 years F.	5 M.	5 F.	10 M.	10 F.	15 M.	15 F.	20 M.	20 F.	25 M.	25 F.	30 M.	30 F.	35 M.	35 F.	40 M.	40 F.	45 M.	45 F.	50 M.	50 F.	55 M.	55 F.	60 M.	60 F.	65 M.	65 F.	70 M.	70 F.	75 M.	75 F.	80 M.	80 F.	85 M.	85 F.	90 M.	90 F.	95 M.	95 F.	100 and up. M.	100 and up. F.	Total by Sexes M.	Total by Sexes F.	Total both Sexes.
CLASS IV.—DEVELOPMENTAL.																																																														
Order 1.—*Children.*																																																																			
Premature Birth	89	68			1	1	69	68									190	68																																																		
Preternatural Birth	1						1										1																																																				
Cyanosis	14	14					14	14									14	14																																																			
Umbilical Hemorrhage	3	4				1	3	1									3	4																																																		
Atelectasis Pulmonum	2	3					2	3									2	3																																																	
Malformation of Heart, &c	18	12					18	12									18	12																																																	
Total Devel. Dis. of Children	107	101			1	2	107	101									105	101																																																	
Order 2.—*Women*																																																																			
Extra Uterine Pregnancy				1																						6		2		3		1																																						
Childbirth		5		11																					2	3		3		7		5		1				1																																
Flooding		10		14																																																															
Puerperal Metritis (Metro-Peritonitis)		13		27																					1	5		10		5		9		3		7																																		
Puerperal Convulsions		18		11																						10		8		3		3																																				
" Mania				4																										2		2																																				
Total Diseases of Women		46		68																					4	16		25		15		33		9		8				1																														
Order 3.—*Age*																																																																	
Old Age	20	44	10	73	1	4																																																																		
Senile Gangrene	2			2																																																																		
Total Diseases of Age	22	44	10	75	1	4																																																																
Order 4.—*Nutrition.*																																																																										
Atrophy	3	1					1	1									1	1									1																																																
Asthenia (Debility, Infantile)	122	116	34	63	3	3	96	66	2	1	4	5	1	3	2		105	54					2	1	2	2	3	2	4		5	3	5	5	3	3	3	2	5	3	6	2	11	5	12	13	19	6	11	3	8	2	6					156	179	335	
Total Diseases of Nutrition	125	117	34	63	3	3	97	67	2	1	4	5	1	3	2		106	55					2	1	2	5	3	2	4		5	3	5	5	3	3	3	2	5	3	6	2	11	5	12	13	19	6	11	3	8	2	6					156	189	330	
Total Developmental	254	307	83	209	5	9	204	168	2	1	4	5	1	3	2		213	159		1			6	1	18	2	30	2	19		38	3	14	5	11	3	3	2	4	3	10	4	17	9	20	30	15	18	31	22	30	14	25	5	1	2	2	337	513	850	

TABLE VIII.—(*Continued.*)

CONSOLIDATED ABSTRACT OF DEATHS IN BROOKLYN FROM ALL CAUSES,

REGISTERED FOR THE YEAR ENDING DECEMBER 31, 1874.

CAUSES OF DEATH	NATIVITY.				Colored		Under 1 year		1		2		3		4		Total under 5 years		5		10		15		20		25		30		35		40		45		50		55		60		65		70		75		80		85		90		95		100 and up.		Total by Sexes.		Total both Sexes.
	U. States		Foreign																																																					
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
CLASS V.—DEATHS BY VIOLENCE																																																								
Order 1.—Accident & Negligence																																																								
Fractures and Contusions	11	3	25												1	1	1	1	2	1	2		2	1	5		1		4		2		4		5		2				3				2		1								30	3	80			
Wounds (various)	3		2																		2		1								2																								5		5			
Suffocation	3	6	2				2	5									2	5					1						1		1																								5	6	11			
Strangulation by Foul			1																																																				1		1			
Killed by Vehicles, Cars, &c	7	6	30	1								1	1				1	1	4		4				1	1	1		3		2				2	1	1	1					1										16	7	33			
Falls	30	7	36	7	1				1	1	2	1	4				1	2	5	3	3	1	3		3		4		4		5	2	8		8		4		2	2	6	1	4		1			2		1					66	14	80			
Burns and Scalds	18	23	3	9		1	3		1		3	5	5		2	1	14	8	1	3	1	2	1	4	1	3		1	1	1	2		1				1	1		2	1			3		1								11	32	53			
Exposure to Cold			1																												1																						1		1			
Poison by Opium, &c	1	1	2				1	1									1	1							1								1																					3	1	4			
Drowning	23	7	36	2	1			2					1	1	1		2	3	3		6	1	6		3		9		8	2	7	1	6	1	13		3		1	1					3								65	10	74			
Nervous Shock			1																																						1												1		1			
Total by Accident and Neg	102	53	118	19	2	1	6	9	2		5	7	11	7	4	4	28	27	9	6	17	4	14	5	15	4	16	1	16	4	16	4	22	1	29	1	13	3	3	5	10	2	6	2	4		2	3			1				330	72	402			
Order 2.—Homicide																																																								
Homicide by Blow	2		5	1																	1		1		1		1				1				2	1																	7	1	8			
Wounds by Knife	1		1																				1		1						1																								2		2			
" Pistol Shot	2		1																								1										1																3		3			
Total Homicidal Deaths	5		7	1																	1		2		2		2				2				2	1	1																11	1	13			
Order 3.—Suicide																																																						
Poison by Arsenic, &c		3	5	1																						1		1	1				2	1	2	1																	5	4	9			
Drowning	2	3	2																							1		1	1																									4	1	5			
Hanging	1	1	1																							2				1																								2	1	3			
Cutting Throat	1		2	1																								1	1		1		1																				3	1	4			
Jump from Roof				1																										1																									1	1			
Pistol Shot	3		6																				1		4								1		1		1		1														9		9			
Total Suicidal Deaths	7	5	16	3																			1		1	7	1	3	2	1	2	4	1	4	1	1		1		1												23	8	31			
Order 4.—Execution																																																						
Henry Rogers by Hanging	1																											1																									1		1			
Sudden Death, cause not ascertained	1																														1																					1		1			
Total VIOLENT Deaths	116	58	141	23	2	1	6	9	2		5	7	11	7	4	4	28	27	9	6	18	4	17	5	17	5	25	2	19	6	19	6	27	2	35	3	15	2	4	5	11	2	6	2	4		2	3	1		1				257	81	338			
Total Deaths at all Ages	4770	4512	1053	1713	105	116	427	1703	1361	1162	679	604	348	341	214	184	3404	3054	2552	2361	2076	1691	1321	1021	1782	1787	2076	1809	2609	2041	2604	2334	2138	2809	2111	2271	1901	1891	1641	1471	1511	1331	1831	671	1061	1071	1601	451	691	461	681	181	331	71	41	21	31	6423	6225	12,648			

TABLE IX.

DEATHS OCCURRING EACH WEEK, BY PRINCIPAL CLASSES, ORDERS, AND DISEASES,

FOR THE YEAR ENDING DECEMBER 31st, 1872.

MORTALITY BY WEEKS ENDING	JANUARY				FEBRUARY				MARCH					APRIL				MAY				JUNE					JULY				AUGUST					SEPTEMBER				OCTOBER				NOVEMBER					DECEMBER					Total.	Per cent.
SATURDAY	6	13	20	27	3	10	17	24	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	6	13	20	27	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	7	14	21	28	31		
ZYMOTIC DISEASES	65	51	57	54	70	81	62	61	76	84	80	80	91	86	82	92	101	80	85	71	69	63	60	64	126	205	328	201	173	138	125	119	123	148	92	71	71	50	50	41	55	[illegible]	56	42	38	30	31	33	39	40	41	61	10	4374	34 65
CONSTITUTIONAL DISEASES	39	48	50	45	46	42	45	49	47	41	47	59	5	51	50	50	47	52	49	38	40	43	41	52	44	73	60	56	73	70	67	48	79	68	55	51	53	74	46	62	50	44	56	40	48	52	32	42	49	62	43	58	13	2700	21 34
LOCAL DISEASES	97	91	61	78	98	72	95	83	87	106	116	102	115	111	97	93	99	105	94	83	69	91	81	75	79	102	250	83	80	60	62	65	85	76	56	61	75	53	73	65	74	75	67	73	70	84	80	69	100	74	70	35	4387	34 60
DEVELOPMENTAL DISEASES	10	19	25	15	11	18	13	10	15	15	25	21	17	16	15	17	15	10	17	14	15	13	15	17	15	23	28	24	13	18	16	16	15	16	16	16	8	18	15	12	11	11	11	9	16	13	17	16	18	17	16	11	6	848	6 70
DEATHS BY VIOLENCE	5	2	4	9	6	3	8	4	3	6	5	3	4	3	5	1	10	5	9	16	13	6	4	22	6	5	17	6	10	3	4	5	10	3	12	7	6	2	8	6	9	5	6	6	3	9	3	5	13	6	23	9		389	2 65
TOTALS	184	211	197	209	240	216	228	216	226	252	275	265	277	267	249	246	272	258	254	222	206	186	202	230	270	408	633	370	351	290	274	255	324	311	231	209	213	217	191	208	198	179	184	164	178	189	167	173	188	225	176	218	70	12 048	100 00
SMALL POX	27	21	16	24	20	26	25	27	24	44	30	28	30	35	24	29	23	21	26	23	20	14	20	14	17	11	16	6	7	7	8	1	9	3	1	5	1	3		2	4	1	3	1	2	1	1	1	1	5	3	9	1	737	5 82
SCARLATINA	10	4	12	15	20	21	1	15	19	7	17	10	10	7	16	12	12	5	13	9	8	9	7	6	3	3	3	5	3	1	1			2	1	2	3	2	3	1		2		2	2	1	1	2	2	3	4	2		327	2 59
DIPHTHERIA	4	5	4	5	4	3	2	4	7	[illegible]	2	5	3	6	1	1	4	7	1	2	4	3	2	2	2	4	3	1	2	1	3	1	3	2	3	4	3	3	1	1	2	1	2	4	10	7	3	6	8	6	6	7		181	1 45
WHOOPING COUGH	3	1	2	3	4	4	5	5	3		5	5	7	1	3	3	4	1	2	1	1	1	1		1		1	2	2	2	3	5	[illegible]	3	1		1	2	1	1	2	2	2	1	1	1					2			98	74
CHOLERA INFANTUM	1	[illegible]	1			2	1	[illegible]				1	[illegible]		2	1	2	3	1	3	2	2	8	16	70	149	219	141	114	78	58	58	67	76	19	22	27	15	13	10	7	4	2	[illegible]	1	1	1							1258	9 91
ENTHETIC OR INOCULATED	2	[illegible]							2	2	1							1	[illegible]			1	2	[illegible]							1	[illegible]			2		1	[illegible]	[illegible]										2	2	2	1	22	17
DIETIC DISEASES	2	3	7	2	2	3	1	1	2	3	3	1	8	3	3	2	5	2	2	2	7	4	[illegible]	1	8	4	7	4	3	3	6	5	8	6	1	4	1	1	2	[illegible]	4	3		1	6	8	3	2	7	3	3	5	[illegible]	177	1 30
DIATHETIC DISEASES	7	4	3	6	7	4	6	7	5	9	4	10	4	7	1	4	3	9	4	6	7	3	3	4	1	8	12	3	5	6	5	2	6	3	3	3	4	6	4	1	5	7	7	6	3	5	5	5	3	4	7	5	5	269	2 12
TUBERCULAR DISEASES	32	14	47	39	39	38	39	42	42	32	43	40	46	44	46	46	44	43	45	32	35	40	41	48	43	65	54	53	68	64	62	46	73	65	52	48	49	68	12	51	45	41	40	34	45	47	27	37	46	58	39	53	8	2433	19 43
CONSUMPTION	23	34	35	38	24	26	21	25	33	21	31	33	34	26	30	23	25	29	26	24	21	25	23	27	24	29	24	28	32	36	29	22	31	31	18	19	23	30	25	31	26	26	31	23	33	30	20	27	35	44	27	40	7	1465	11 58
MARASMUS	4	4	5	3	4	0	4	4	2	7	4	6	3	10	5	10	12	8	8	6	7	8	7	12	8	25	18	22	19	20	25	22	33	25	32	25	21	25	15	21	16	10	14	9	5	13	5	7	7	8	3	4		909	1 81
DISEASES OF NERVOUS SYSTEM	18	30	26	31	42	28	12	45	20	40	38	35	42	45	15	40	46	52	41	31	32	11	41	34	47	58	140	57	51	35	29	33	45	51	54	28	36	34	33	30	38	26	25	23	30	23	31	31	20	27	23	26	12	1943	15 56
CIRCULATORY SYSTEM	6	10	9	4	12	5	9	2	6	14	8	7	5	11	4	9	12	11	8	7	3	10	8	7	5	7	5	5	4	6	5	2	6	3	2	5	8	6	7	3	4	3	10	6	8	6	6	8	3	3	4	6	5	343	2 70
DISEASES OF RESPIRATORY SYSTEM	27	36	18	26	31	25	28	24	26	37	54	46	41	40	35	36	30	25	25	20	21	25	21	15	12	17	17	2	15	6	15	10	14	14	7	10	19	16	17	14	16	25	30	28	25	23	36	28	26	45	30	34	13	1302	10 20
BRONCHITIS	7	8	2	9	6	4	1	3	9	9	7	3	9	5	6	4	4	6	4	3	4	3	4	4	4	2	7	[illegible]	3	2	1	1	2	4	1	1	3	2	2	2	3	3	8	8	4	4	10	5	3	11	8	6	2	239	1 88
PNEUMONIA	17	22	15	11	17	15	16	17	22	19	34	30	34	23	18	26	20	12	17	20	19	19	11	8	7	10	6	1	6	3	12	7	8	7	5	8	13	8	11	9	10	12	14	14	17	11	25	18	12	25	15	21	7	778	6 15
DIGESTIVE SYSTEM	10	14	5	4	8	8	11	4	7	8	9	8	15	6	10	6	6	10	12	12	11	12	9	15	11	16	24	14	11	7	12	14	13	5	6	9	8	11	6	9	9	8	9	6	7	13	4	9	11	13	8	4		502	3 27
URINARY SYSTEM	3	1	1	7	5	5	4	7	4	5	5	6	7	8	2	2	5	6	8	3	2	3	2	3	3	5	4	3	4	7	[illegible]	5	6	3	6	5	4	5	9	1	5	10	2	4	2	4	4	3	5	10	7	7	3	245	1 93
GENERATIVE SYSTEM			1	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	2	[illegible]	1		1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	4	1	[illegible]	[illegible]	1	1	3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	1	2	[illegible]	[illegible]	2	2	2	2	31	24
LOCOMOTORY SYSTEM						1	1	1	1	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]	1	[illegible]	[illegible]	1	1	[illegible]	[illegible]	1	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	1	[illegible]	[illegible]	1	[illegible]	1	[illegible]	[illegible]	1	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	18	1 1
INTEGUMENTARY SYSTEM														1	[illegible]																										1	[illegible]													1	3
CHILDREN (Developmental)	4	8	5	5	1	5	1	8	5	2	3	3	2	4	3	6	3	6	1	2	4	3	3	6	3	8	4	6	2	3	1	4	6	2	5	1	3	8	3	3	1	4	3	1	3	2	7	3	5	4	5	[illegible]	2	206	1 72
WOMEN (Puerperal)	3	5	7	1	2	2	1	4	4	4	5	7	4	1	2	2	3	1	4	2	3	2	1	2	2	[illegible]	5	[illegible]	2	1	1	[illegible]	3	2	2	[illegible]	3	[illegible]	[illegible]	2	[illegible]	1	1	2	[illegible]	1	2	4	2	2	1	1	113	89
AGE	2	1	4	4	2	4	4	1	2	3	7	3	4	3	2	2	7	4	4	2	2	3	2	5	6	3	6	5	3	2	5	1	5	3	4	3	2	2	7	3	3	1	[illegible]	2	9	6	3	5	3	3	1	2	1	190	1 51
NUTRITION	1	5	9	7	6	7	7	6	6	6	10	8	7	8	8	7	2	5	5	8	6	5	7	4	4	12	13	13	6	12	9	8	4	8	5	7	5	5	7	5	5	3	7	5	2	5	6	6	6	8	5	8	2	330	2 60
ACCIDENT AND NEGLIGENCE	1	1	4	5	2	3	8	4	3	6	3	3	3	3	4	3	10	5	8	13	12	5	3	18	6	4	15	5	6	3	4	4	10	3	12	7	6	1	8	5	9	4	5	5	3	5	1	5	11	5	2	6		201	2 10
HOMICIDE				2										1	1	[illegible]	[illegible]			1				1		1	1	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	1	[illegible]	[illegible]	1	1	[illegible]	[illegible]	[illegible]	1	[illegible]	11	11
SUICIDE		1		2	3						2		1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	2	1	1	1	3	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]	3	1	[illegible]	[illegible]	1	1	[illegible]	2	[illegible]	30	2 1
EXECUTION	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	

moved from the vaults in the city of Munich, and the remaining nine-tenths are absorbed by the ground. Excluding those living in houses connected with the sewers, we have in the 15th, 16th, and 18th Wards, about 44,000 people using the old-fashioned privy vaults, and it is astonishing to observe with what pertinicity some people cling to those primitive contrivances and yet they may be the cause of destroying many of their children and others most dear to them.

Waste from 44,000 people annually: excrement, 1,606 tons; urine, 16,060 tons; total 17,666 tons. Excrement removed, 160.6 tons, urine removed, 1606.6 tons; total, 1766.6 tons. Waste remaining in the ground: excrement, 1445.4 tons; urine, 14,454.0 tons; total, 15,899.4 tons.

Those figures have been compared with the records kept of the work of the night scavengers in these wards and have been found in the main to be a fair average for the removal of night soil. The vaults in these wards have a depth varying from two to four feet. There is, in many cases, a part of the vault covered with loose board, removable, to allow the contents to be spread on the surface, in some cases to fertilize the ground, and in others to save the expense of scavengers. It would be safe to say that there is not a water-tight vault in any of the three wards except those connected with sewers. The ground in which they are constructed is always very porous, so that they are rarely filled, except with surface water until the porous ground becomes filled with solid matter, and the scavengers remove little, even less than one-tenth of the offensive matter.

There are probably from 1,500 to 2,000 horses in this section of the city; there are no water-tight manure-vaults and nearly every one of them contains more or less ground-water so that all the soluble salts, and very much of the putrescible matter passes into the ground before it is removed. Until the Health Board enforced the rules regarding manure vaults, nearly all the waste from the stables was left on the surface, exposed to the wind, rain and sun. In October, 1873, a vault was dug in Seigel Street near Graham Avenue. The surface consisted of a layer of earth and ashes about two feet in depth, below this was a layer of stable manure 2½ feet thick, and the remaining three feet consisted of street manure and ashes; and in digging a cellar at the corner of Broadway and Harrison Avenue, the whole mass, to the depth of nine or ten feet was street manure, removed, in this case, to fill up some other low lot. We may then conclude with Eigenbrodt, "The impregnation of the earth around our dwellings with excrementitious matter, and the consequent pollution of the air, is a most fruitful cause in the production of disease. We contract more numerous and far more deadly diseases within our dwellings, in consequence of the pestiferous influence of the exhalations arising around us, than we contract outside of them from the most unfavorable changes of the atmosphere." Virchow says: "The mortality throughout the whole country, Germany, and especially in the agricultural districts of East and West Prussia, Posen and Pomerania, is far in excess of that in the capital and other large cities of the empire." Again: "The mortality among the rural population is, in many parts of the country, much greater than in the cities; uncleanliness and filthiness, bad air and bad water are, in many villages, far more frequently met with than in the cities," and he continues: "we see in the streets and in the court-yards of our villages, heaps of manure before the doors of the dwellings, and near the springs and wells, filth in the streets and public places, the close proximity of stables and dwellings, and we must admit that we have more uncleanliness, a greater collection of filth, more pollution of the surface, more fœtid odors, more foul

poison in the air, than can be found in most cities." We have cited thus freely the opinions of men who stand in the very foremost rank among the sanitarians in the world, of men whose opinions have the weight of authority everywhere, because every word quoted has its application in the locality under consideration.

The hygienic significance of the ground-water, in a section of the city that has upwards of 800 acres of marsh ground, is of the highest importance. In most places the water rises to the level of the tide, within two or three feet of the surface, penetrates the rough walls and fills cellars, making the houses damp and unhealthy. There is absolutely no drainage, and, in many cases, the sewers are a positive nuisance, for the tide drives their contents into the cellars. Very often the storm-water forces the covers off the man-holes of sewers, and floods the street as well as the cellars. This happens frequently on Broadway near McKibbin Street. I have been informed by the Alderman of the 16th Ward that the same thing has occurred in Graham Avenue near Scholes Street. Thus, surface water and tide water contribute to increase the moisture of the porous soil in this district.

Devoe made a series of observations extending from 1851 to 1863, with the following results: in February 1865, the frost penetrated to a depth of 2½ feet below the surface; that is, the freezing point was found at that depth. At the depth of 5 feet the temperature was in July, 54.88°, in August, 56.84° and in September, 56.79°; again in February, the coldest month, 38.95° and in March, the next coolest, it was 40.26° There is here then a remarkable correspondence between the change of underground temperature, and the rise and fall of underground water. The following conclusions have been drawn by Virchow: that ground water reaches its lowest temperature when it approaches nearest to the surface, and on the other hand it attains its highest temperature when it falls the lowest. The variation of temperature in the different superficial layers of the earth's surface is very marked. At the depth of one foot the temperature for August was 4.3° and at two feet it was 2.9° warmer than in September, and again in March it was about 2.7° warmer than in February.

It is evident, then, that the process of fermentative decomposition must vary with changes in the rise and fall of ground-water, with the seasons, as influencing the temperature of the different layers of the earth's surface, and also with the different degrees of soil pollution. Dr. C. Pfeiffer, from a series of experiments made at Weimer in 1870 and 1871, on the temperature of the surface at different depths, concludes that it exerts a great deal of influence on the process of fermentative decomposition, and believes that it has a great influence in spreading and intensifying the severity of epidemic cholera. The same writer also believes that pollution of the earth's surface causes an increase of about seven degrees in the temperature at the depth of three feet below the surface.

In children, the various functions of the body are performed with great activity; absorption and excretion go on rapidly, because the individual grows more rapidly in childhood than in adult life; and for this reason, children are very susceptible to the influence of all noxious elements in the atmosphere; the nervous system is highly sensitive and manifests its extreme irritability, by convulsion and many of the diseases, peculiar to this age. The mortality among children must be, it is believed, the leading question for sanitary reform in the future. The death-rate among children intead of decreasing with advancing civilization, is fearfully on the increase. This increase of mortality does not depend on climate nor on nationality;

it arises obviously from local and mostly from preventable causes. Virchow states that the average death-rate among children in Lubeck was for 30 years 16.84 per thousand, and the average for Prussia for the five years from 1859 to 1864 was only 20.4 per thousand; but he says, in many Prussian cities, the mortality among children has, in a comparatively short time, assumed frightful dimensions.

In Stettin, the following increase is remarkable:

1854	1855	1856	1857	1858
16.6	26.6	22.4	25.5	34.5

of the whole number of deaths.

In Berlin, in the three years from 1868 to 1870, there were born 90,672 living children, of whom 26,550 or 29.28 per cent. died under one year.

The following table shows the increase of mortality in Berlin for a period of 15 years:

Ages.	1854 to 58.	1859 to 63.	1864 to 68.
Under 1 year.	1000	1353	2153
1 to 15	1000	1087	1848
15 " 20	1000	1113	1743
20 " 40	1000	1080	1706
40 " 60	1000	1009	1502
over 60	1000	1108	1443

It will be perceived from the table, that the deaths among children under one year was more than doubled during the fifteen years given. The proportion will be more clear if we compare the death ratio according to ages in the following table: Of the whole number of deaths there were in every 100:

Under 15 years	.....	58.7 per ct.
From 16 to 29 "	.....	2.0 "
" 21 " 40 "	.....	14.3 "
" 41 " 60 "	.....	12.7 "
over 60 "	.....	12.3 "
		100.

In the sixteenth ward, in 1873, the number of deaths was as follows:

Under 1 year		426—37.6	per ct.	of	whole	number of deaths.
From 1 to 5	"	289—25.5	"	"	"	"
" 5 " 20	"	72— 7.2	"	"	"	"
over 20	"	326—29.7	"	"	"	"

The number of deaths under 5 years, was: 715—63.1 per ct. of whole mortality.

The number of deaths under 20 years, was: 797—70.3 per ct. of the whole.

The number of deaths in Berlin under 20 years: 60.7 per ct. of the whole.

The number of living children under 5 years of age is estimated to be about one-tenth of the whole population. This would give about 2643 children under five years in the 16th ward. The number of deaths under five years was 715; so that there were 271 deaths per thousand among the children; or 27.1 per ct. of all the children in the ward under five years die annually. Of these 16.1 are under one year, and 11.0 are between

one and five years.* The whole population of the ward, as given before, was in 1870, 26,438, of whom 15,298 were native born, and 11,140 were of foreign birth. Among the foreign born, the whole number of deaths over 20 years, was 276, equal to 24.4 per thousand of the foreign population over 20 years, but as deaths under 20 years are among the foreign born, extremely few, the figures may be accepted as sufficiently accurate for the whole. Among the native population the deaths, allowing for the assumption in the last paragraph, that few among the foreign born of the population die under 20 years of age, were 879, which would be nearly 58 per thousand of the native population. Among the 15,298 natives the deaths over 20 years were but 51 being only $4\frac{1}{2}$ per thousand.

Of 1,133 deaths in the ward in 1873 there were:

From	Cholera Infantum..... 137	13.1	per cent of whole.
"	Convulsions..... 130	12.4	" " "
"	Marasmus Infant..... 84	8.0	" " "
"	Pneumonia 80	7.6	" " "
"	Consumption..... 93	8.1	" " "
"	Hydrocephalus..... 31	2.7	" " "
"	Variola..... 31	2.7	" " "
"	Croup and Diarrhœa, each... 30		
"	Scarlatina..... 25		
"	Diphtheria..... 21		

The enormous proportion of the first three classes given must arrest attention, because they are all peculiar to children, 12 cases of Marasmus Senilis having been excluded; 351 deaths from Cholera Infantum, Convulsions and Marasmus, being 33.5 per cent. more than one-third of the whole number of deaths. The following table will show that in this particular 1873 was not an exceptional year.

DEATHS FROM CHOLERA INFANTUM.

Ward	1870	1871	1872	1873	Population Census of 1870
16	156	80	154	137	26,438
15	41	20	53	46	18,406
18	26	17	56		11,607
8	27	26	46		9,592
6	44	36	58		28,290
12	61	27	75		18,302
5	42	23	45		20,490

The following is the ratio per thousand of the whole population, of deaths from Cholera Infantum for the year 1870, the year in which the census was taken.

Ward	16th	15th	18th	8th	6th	12th	5th.
	6.	2.2	2.3	2.8	1.5	3.3	2.

It will be observed that while the 6th Ward has a population greater than the 16th, the deaths from Cholera Infantum are only as one to four.

*Thus the equivalent of one in every four of all the children born in the ward, in the course of the year, die during the year; one of every four of the element from which the population of the ward is to be maintained, is removed from it. A child is removed from this family, and another from that, and no one sees nor takes heed of what happens outside of his own household. It is precisely because they do not look beyond their personal interests, beyond the precincts of their own homes, that they do not know how many die among them every year, that they cannot be convinced that the mortality is any greater in the 16th ward than in any

It may be observed again that it is impossible in classifying disease according to wards to show the influence of unhealthy localities in producing certain classes of disease, and it is equally difficult to develope the other causes that are most active in producing them. There is no ward in the city, perhaps, in which the contrast is greater than in the 18th. The upper part, east of Flushing Ave., occupies high ground, and the people have in most respects, sanitary surroundings, while the lower part is at the point of discharge of all the filth from the slaughter houses, from factories and the breweries on the adjoining part of the high ground, the people are unavoidably surrounded with filth, and no effort on their part can save them from it, except leaving their homes. If the authorities are bound to preserve an individual from destroying his neighbor's life with a deadly weapon, they ought to prevent him from doing the same thing on an extensive scale by a slower but equally certain means. The lower part of the 18th Ward if classified by itself, would probably show a death-rate much greater than the 16th. Then the 16th and the 18th and again the 8th and 7th might be compared with greater similarity of results.

The following table gives the deaths from zymotic diseases during the year 1873:

	Total Deaths.	Ratio to Population.	Deaths by Zymotic Diseases.	Rates to Total Deaths.
City,	10,968	27.6	3,280	30.
Ward 16,	1,155	43.	359	31.
" 15,	431	22.	145	33.3
" 18,	446	38.	142	31.8
" 8,	344	35.	119	34.9
" 6,	934	33.	241	25.8
" 12,	592	32.	195	32.9
" 5,	519	25.	149	28.7

After reviewing the various causes of mortality in Berlin, Virchow concludes that: first, the gross mortality in Berlin is exclusively increased by the enormous death rate among children under one year. Secondly, that the mortality among adults is chiefly due to temperature, and in a comparatively less degree to the condition of the ground and surface water, and, thirdly, that the mortality among children under one year is partly due to the temperature and partly to the terrible summer diseases that correspond with the fall in the ground water.

The tenement house population in some parts of the 16th Ward is large, but not greater than in many other parts of the city, and the houses themselves are as good as the average, even better than in some other localities. Still, the rooms in many of these are smaller than the average. In the tenement house survey, made in 1873, in the 16th Ward, many of the sleeping rooms allowed to each occupant not more than one hundred to one hundred and fifty cubic feet, and some of these were poorly ventilated. What Pettenkoper says of Munich is so true of this ward that we give his words: "the number of dwellings is not too small but the rooms

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other in the city; and it is because they do not look at the records of deaths, and the causes that produce them, that the many intelligent men among them, are led to attribute the excess to many causes besides the true one. They need to be convinced, to be fully convinced of the evils from which they are suffering, of the dangers to which they are exposed to, more than to apply the remedy to do more to preserve the sanitary condition of their homes, not alone for their own sakes, but for the sake of their offspring and the future of the German race in this country.

are far too small and do not afford a sufficient quantity of air for the occupants. Space that is sufficient for two persons is evidently too small for three or four. Our builders seem to study how to lay out the greatest number of rooms in the smallest possible area, so that a modern dwelling of eight rooms occupies no more space than did formerly one of four or five rooms." It is not surprising then, that in such apartments children suffer from Marasmus, Convulsions and diseases of the nervous system generally; and here too, we have the conditions most favorable for spreading and continuation of such diseases as Scarlatina, Small Pox and Diphtheria. The well known disposition on the part of the people to conceal such cases, makes them all the more dangerous. These conditions find their exact counterpart in the desription given of the city of Pekin by Morache. "Small pox," he says, "has its most efficient means of propagation in the domestic habits and mode of living common among the majority of the inhabitants of Pekin. It is no exaggeration to say that of every three persons we meet, one seems to have been exempt from the disease, a second bears slight traces of it, and the third is disfigured by deep cicatrices. It is certain that all the blind, and the number is extraordinary, have lost their sight in consequence of Small Pox. The disease has become permanent in Pekin; but it is much increased in autumn with the approach of the cold weather, which obliges the inhabitants to remain in doors; remains stationary during the winter, and again assumes greater activity in the spring." In speaking of Vaccination, he says: "If the means of prevention is but little used, the blame rests essentially with the indifference of parents, perhaps, also, there is a certain amount of prejudice against it, for the young emperor himself has never been vaccinated." We know that in the 16th Ward many physicians have heretofore opposed it very strongly. Diphtheria is another of the great epidemics that visits Pekin annually. It accompanies Typhoid Fever, but its blows are far more terrible; it attacks adults as well as children, and often, in a few days, destroys every member of the family into which it gains admission. It is contagious beyond all doubt. During the months of January and February of 1866, its ravages were dreadful, and it began to abate only with the approach of fine weather, when the poor and miserable people could escape from their wretched abodes into the fresh air These people sleep in the same room in which they cook and eat; they retain at night the clothes they wear during the day, and, as they have but one bed, we can readily understand why whole families should be swept away so that not one is left. About four of every five cases died, and the Chinese estimate, that, during the three winter months of 1865 and 1866, not less than 25,000 persons fell victims to this disease." The Germans are very fond of feather beds, and light feather ticks are quite common as covering. These are, no doubt, very comfortable; but they must be, when contagious diseases prevail, the very hot-beds of disease, as the feathers are not easily renovated or disinfected, and they are too expensive to be destroyed until they are worn out.

There is another element, the importance of which will be readily comprehended by every individual in the community, and especially by the physiologist. I refer to the very early age at which marriages are contracted. The very general testimony of physicans and clergymen as well as of the more intelligent of the people themselves, and also the records in the Register's office, show this to be the fact; but the records in the department are not sufficiently definite to allow any general deductions to be drawn from them, beyond the general confirmation of the fact itself, and I am not aware that the subject has been developed anywhere else in

this country. I will take one more description from Marache, because it is the only allusion that I have ever seen made to the subject. In speaking of the diminutive size of the Chinese, and the slowness with which they arrive at maturity, he says:—"In Pekin it is not uncommon for children to be affianced at a very early age, just as they are in India, but they live separated until they are thirteen or fourteen years of age. The offspring of these marriages, before the parents pass the age of 20 years, never live, miscarriages before this age is reached are the rule. This fact is universally recognized, but the Chinese attach little importance to it, because, after the first normal birth, pregnancies follow in rapid succession," and he remarks, "these people have not yet conceived the idea which we are endeavoring to elevate to the dignity of a social principle, namely: that it is the duty of parents to limit the number of children to the resources of the family. For individuals this may be very often a great inconvenience, but society gains by the rapid increase of the population notwithstanding the many elements dangerous to life and health by which the people are surrounded." These three passages have been cited for two reasons: because they describe explicitly and tersely the conditions sought to be presented, and because, if we have presented to us the portrait of those we consider far inferior to ourselves, we are apt to criticise it as it deserves and if we afterwards find in it a striking resemblance to ourselves we will give it a more careful consideration and a closer study than if it were at first presented as our own likeness.

The Germans in this city are a hard working, industrious, and frugal people; it would not be too much to say that many of them are parsimonious in their habits. Both the men and the women work hard, too hard. From early morning till late at night they toil, hardly do they take time for sleep; tailors and shoe makers and many others seldom breathe the air outside their shops or dwellings. Their vigorous constitutions enable them to endure much, but this excessive application has its influence on their offspring. Many of these too work hard and work constantly from early childhood and therefore grow up with delicate constitutions and a disproportionate developement of the nervous system and a consequent tendency to nervous diseases, especially in infancy and childhood. The people retain far too frequently their frugal habits and are not sufficiently nourished to enable them to endure the severity of the climate and the excessive toil.

Other questions relating to moral and social habits and conditions are beyond the reach of a full and satisfactory investigation under the present circumstances, and some opinions formed on these points are too crude to be presented here. Having been removed from the district at a time when the work became somewhat familiar and a more extensive acquaintance with the people would have made it possible to collect sufficient facts to arrive at a more definite conclusion on the subject just alluded to, the conviction is still very strong that the causes already attempted to be presented will, in no small measure, account for the excessive mortality in the district under consideration.

Respectfully,

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Assistant Sanitary Inspector.